COAL AGE

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Facts and Figures.

The history of the development of America is a record of unparalleled interest, but the story of the growth of coal mining is a romance which reads like fiction.

The pinnacle of progress in the coal industry was reached in 1912, when the total production amounted to 511,964,403 short tons, having a spot value at the mines of approximately 680 million dollars. This was the largest output and highest total value ever recorded in any single year.

Nearly one-half the coal produced in the world is mined in the United States. The following figures clearly show the miraculous growth of the industry:

In 1850—11	states	produced	7,018,181	short	tons
" 1860—15	"	"	14,610,042	"	"
" 1870—21	"	"	33,035,580	"	"
" 1880—25	"	"	71,481,570	"	"
" 1890—28	"	"	157,770,963	"	"
" 1900—28	"	"	269,684,027	"	"
" 1910—27	"	"	492,647,863	"	"
" 1912—28	"	"	511,964,403	"	"

It is evident from the foregoing table that the output of coal has practically doubled every 10 years. It is likely therefore, if business continues normal, we will see either a material increase in production, or much higher prices for the tonnage mined.

The production of coke in 1912 also made a new record, bettering the figures shown in 1910 by a small margin. This important branch of the industry has shown a growth equally as remarkable as coal mining. The following summary is convincing:

In 1880 the	U.S.	produced	3,338,300	short	tons	coke
" 1890	"	"	11,508,021	"	"	"
" 1900	"	"	20,533,348	"	"	"
" 1910	"	"	40,807,204	"	"	"
" 1912	"	"	41,803,199	"	"	"

The total output of coke in 1912 had a spot value of approximately 110 million dollars, and was produced by 591 plants operating 107,000 ovens. The feature of the coke-making business was the advance in retort-oven practice. A plant of the byproduct type, comprising say 75 ovens, would cost approximately $1,000,000, while a 75-oven beehive plant costs only $65,000. The latter installation, however, will produce only about 52,500 tons annually, while the 75 byproduct ovens will show a yearly output of 400,000 tons.

Practically the only difficulty in the way of the general adoption of the byproduct oven is its first cost. Here is an important instance, then, where industrial waste of a criminal order can be eliminated only by consolidation along lines so generally condemned. Those who will look back a century hence, when "Connellsville coke" is but a name in history, will marvel at the stupidity of a nation dissipating its natural wealth into fifty miles of atmosphere. Wise men no longer predict what may be in years to come, so there is some consolation in the belief that a people of greater intelligence than ourselves will recover from the atmosphere a high percentage of what we have thrown away.

A few years ago the press and public in the United States were calling attention to the high death rate in our coal mines, as compared with European practice. A revision of opinion is now in order. Counting only those fatalities in 1912 where three or more were killed, a careful compilation shows the following: United States, 254; Great Britain, 117; Germany, 183; France, 85; Japan, 284. Considering these figures in the light of tons mined, this country does not compare so unfavorably with Great Britain, and is far ahead of Germany, France and Japan.

In fact, working in the coal mines is now about as safe an occupation as following a vocation in New York City. In our metropolis last year, 532 persons were killed on the streets. Of this number 221 were struck by automobiles, and fatalities due to this one cause are increasing at the rate of 38 per cent. annually. If we continue to improve safety conditions in our mines, these underground workings will soon be a haven of refuge for New York citizens who are not quick on their feet.

In conclusion, there is much that we of the coal industry can be proud of. Our product is the most needed of all the necessities Providence hasn't seen fit to make free, like air and water. It is the life-blood of all industry. More than two million men gain their livelihood directly or indirectly through the production and use of this mineral. Two billion dollars are expended for it, although the producer gets less than one-third of this sum, which is equal to nearly one-tenth the total income of the nation. Freighting brings in over two-thirds the gross revenue of the 350,000 miles of American railways, and coal forms nearly one-third the entire freight business of the country. It does appear, therefore, that we should feel quite pleased with our progress although it seldom pays to be entirely satisfied.

Reviews of Coal Mining for 1912

SYNOPSIS—Reports from state mine inspectors and special correspondents, giving estimates of the year's production and the outlook for 1913.

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Alabama

By G. B. Allen

The general conditions in the coal industry of Alabama during 1912 have been most satisfactory and the indications are that this year's production will exceed that of any previous year, probably running to between 18,000,000 and 19,000,000 tons. In support of this prediction the advance statistics recently gathered from twelve of the largest operators in the district show material increases in tonnage during the greater portion of this year over that of 1910, which was the "banner" year.

There have been no strikes or other labor disturbances in any quarter, although here and there at certain seasons there have occasionally been slight temporary shortages of labor. A considerably larger number of men have been employed in all directions. No serious accidents have occurred, excepting one in Tuscaloosa County, where 18 men perished in a gas explosion.

There has been an increased use of permissible explosives. Mechanical haulage by electricity and gasoline motors has been made more extensive, and operators have incurred large expense for additional spraying facilities. Several large Jeffrey fans have been installed in the district.

The general trade in this state is divided into three classes, namely: steam, domestic and coke. New openings have been made in Walker, Jefferson, Tuscaloosa, St. Clair and Jackson Counties (twelve in all) and these give promise of even greater production in 1913. The Pierce Coal & Lumber Co. has already opened up some mines on the Belmont seam (in Jackson County) and will make other openings at once. This company will concentrate all its coal at one tipple, and the total output will reach approximately 1000 tons per day.

During 1912 McCormack & Ramsey, of the Pratt Consolidated Co., purchased the Newcastle properties from the Anniston Iron Corporation. Eight hundred tons are being mined daily and it is expected to greatly increase the output in the early part of 1913.

The Woodward Iron Co. absorbed the Birmingham Coal & Iron Co.; the Bonnyman-Norman Coal & Iron Co. took over the Coalmont Mine of the Helena-Cahaba Mining Co., and a small property near Brookside. These were the only consolidations of consequence.

Unfortunately there was a shortage of cars in September, October and November, and at times this was the cause of some embarrassment; the situation in this respect began to improve in December, however, and no particular complaint on this score is heard at present.

The Tuscaloosa Mineral R.R., (property of the Louisville & Nashville R.R.), operating between Birmingham and Tuscaloosa (56 miles), was opened for traffic in the spring of 1912. This line will develop a large tract of valuable mineral lands, which will naturally inure greatly to the general prosperity of the Birmingham District.

In the direction of safety, the important operators have placed several classes of well-trained helmet men in readiness for immediate service when emergencies arise. These classes have received instruction under Government supervision at the Mine Rescue Station in Birmingham, and have been awarded Government certificates of competency.

The coke production in Alabama will show an increase in 1912 over 1911 (when 2,756,697 tons were manufactured), although it is doubtful whether it will be in excess of the production in 1910, which was 3,231,399 tons. The Government work on the Warrior River is nearing completion, a number of locks having been finished. Immense deposits of undeveloped high-grade coal are accessible to this stream only, while others are accessible to both the river and the steam roads.

Practically all of this enormous tonnage for markets farther south will be transported by barges down the Warrior River, and thence by the Tombigbee and Alabama Rivers to the Gulf.

It is estimated that no other agency will contribute more vastly to the welfare of general trade conditions in Alabama than the achievement of water transportation from the rich Warrior coal fields to the Gulf of Mexico.

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Colorado

By James Dalrymple*

The condition of the coal industry in the state of Colorado for 1912, has been wholesome and normal and there has been a steady increase in the production over that of 1911. The demand for coal in 1912 has greatly exceeded the production. This was due, in a measure, to the better financial conditions prevailing in the country. The operators have been seriously handicapped, however, both by a shortage of miners and a shortage of cars.

The shortage of miners may be said to be due largely to the Turkish war, which has caused an egress from the United States of many Turks, Greeks, Bulgarians and other foreigners, who follow mining as a livelihood. The shortage of cars has been greater than was ever known before and may be attributed, in part, at least, to the bumper crops. The coal industry is but one of the many great industries of Colorado, which has been hampered.

Colorado comes under a new administration early in January, 1913, at which time the legislature will convene, when it is confidently expected that our present very inadequate mining laws will undergo some much-needed changes.

The price of domestic coal was practically the same as the preceding year, with the exception of lignite coal, which suffered a slight decrease. In the matter of wages, in the southern coal field there has been an increase of about 5 per cent. In the northern field, the American Fuel Co. and the Louisville Coal & Land Co. have signed up with the United Mine Workers and, as a result, conditions have been greatly improved and the advance in wages given, which was demanded in 1910, amounts to little more than 5 per cent. The strike is still on, however in the mines of the National Fuel Co., the Rocky Mountain Fuel Co. and the Brooks-Harrison Fuel Co.

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Coal is now mined in 18 counties in this state and 90 per cent. of the mining is done by hand, while machinery is used for the remaining 10 per cent. For the latter, electrical machinery and compressed air are used.

The number of new mines started and old mines reopened is fifteen. The total number of mines in operation this year is 158. The average number of men employed during the year was 13,713.1, and the number of days worked was 186.4.

The number of fatal accidents recorded to Dec. 1, 1912, has been 92, while the non-fatal for the same period has been 291. Falls of roof still leads as the cause of fatal accidents, although there have been several gas explosions this year. The most disastrous explosion occurred in the Hastings mine, Las Animas Co., June 18, 1912, when twelve men met their death. In the Piedmont mine, also in Las Animas Co., on Aug. 29, 1912, the superintendent and the mine boss were killed by a gas explosion. A gas and dust explosion in the South Canon mine, in Garfield Co., on Oct. 1, 1912, killed two men, and the night foreman of the Simpson mine, in Boulder Co., was killed on Nov. 9, 1912, by an explosion of gas.

Black powder is used in practically all of the mines of the state, except in the coking coal mines, where permissible powder is used. It is but a natural consequence that the mining dangers are increased by the changing, shifting forces of men, although as a whole the operators and miners show a disposition to respect the law.

SUMMARY OF THE COAL PRODUCTION OF COLORADO IN 1912

Number of mines in operation	158
Tons of lignite coal produced	2,213,606
Tons of semi-bituminous coal produced	701,913
Tons of bituminous coal produced	8,327,070
Tons of anthracite coal produced	64,379
Total number of tons produced (Dec. estimated)	11,306,968

There have been but seven coke plants operating in the state during 1912 and the production has amounted to 928,917 tons, some of which has been shipped from Colorado, although the bulk has probably been used at the smelters throughout the state. A very superior grade of coke is produced here. The Sopris coke, which possesses a quality particularly adapted to the production of steel, is used exclusively at the Minnequa Steel Works, which contracts for the entire Sopris output of coke.

COLORADO COAL PRODUCTOIN FROM 1873 TO 1911 INCLUSIVE

1873	69,377	1892	3,771,234
1874	87,372	1893	3,947,056
1875	98,838	1894	3,021,028
1876	117,666	1895	3,339,495
1877	160,000	1896	3,371,633
1878	200,630	1897	3,565,660
1879	322,732	1898	4,174,037
1880	375,000	1899	4,826,939
1881	706,744	1900	5,495,734
1882	1,161,479	1901	6,210,405
1883	1,220,593	1902	7,522,923
1884	1,130,024	1903	7,775,302
1885	1,398,796	1904	6,776,551
1886	1,436,211	1905	8,989,631
1887	1,791,735	1906	10,308,421
1888	2,185,477	1907	10,965,640
1889	2,400,629	1908	9,773,007
1890	3,075,781	1909	10,772,490
1891	3,512,632	1910	12,104,887
		1911	10,197,595

Colorado

By F. W. Whiteside*

In the year 1906, the coal production of the state broke all previous records, reaching a total of 10,308,421 tons.

Since that year it has fluctuated about this amount until 1910, when the highest point yet reached was attained, the total being 12,104,887 tons. In 1911, the figures dropped to 10,197,595 tons and in the past year again ascended to 10,943,153 tons, a gain of 7.3 per cent. over that of the preceding year. Of this amount only the tonnage figures of the first 11 months of 1912 have been received; a conservative estimate for the production of December was therefore added to reach the total given.

The coke production of Colorado during the past four years is shown as follows:

COKE TONNAGE IN COLORADO

Year	No. of coke ovens	No. of tons produced
1909	3240	1,076,593
1910	3164	1,190,901
1911	2764	937,952
1912	2857	969,688

Total number of coke-oven plants operating, seven; gain in 1912 over 1911, 3.3 per cent.

The total number of fatal accidents in and about the coal mines for the entire state during the past four years was as follows:

FATAL ACCIDENTS IN COLORADO

Year	In the mine	On the surface	Total
1909	89	8	97
1910	319*	4	323
1911	86	5	91
1912			92**

* 220 men were killed in the four big explosions which occurred during the year.

** Reports up to Nov 30. December reports not yet received.

The coal tonnage for 1912 is distributed as follows:

TONNAGE BY COUNTIES, COLORADO

Counties	Number of Mines Working	Tons of Coal Mined
Boulder	20	1,052,938
Delta	5	66,844
El Paso	7	340,527
Fremont	12	734,037
Garfield	3	177,205
Gunnison	8	549,608
Huerfano	29	1,897,548
Jackson	1	41,951
Jefferson	3	81,419
Las Animas	38	4,821,782
La Plata	4	121,056
Mesa	8	98,870
Pitkin	1	74,820
Routt	6	430,000
Weld	11	454,548
Total	156	10,943,153

Average tonnage per mine 70,148.4 tons.

The largest producers in 1912 were: Delagua mine, of the Victor-American Fuel Co., 625,736 tons; Frederick, Berwind and Primero, all properties of the Colorado Fuel & Iron Co., with productions of 387,312, 364,162 and 325,220 tons respectively, all situated in Las Animas County.

Place of Coal in Colorado's Mineral Industry

Assuming two dollars per ton as a fair average price, the value of the coal production for the past year amounts to $21,886,306.

The production of the most important minerals mined in Colorado is as follows: Coal, $21,886,306; gold, $18,786,000; zinc, $8,361,000; silver, $5,099,000; lead, $3,331,000, and copper, $1,165,000, which gives coal a lead of $3,100,306 over the gold production and a value of 37.3 per cent. of the entire mineral output of the state.

A number of influences affected the output of the year just concluded. While general business was better than in 1911 and the demand for coal therefore greater, there was still room for much improvement. All operators were seriously affected by the Balkan war, which took many of their most reliable men. During the busiest period of the fall season, the shortage of cars seriously impeded deliveries and made systematic mine operation impossible.

*Chief engineer, Victor-American Fuel Co., Denver, Colo.

The increase in output, though but 7.3 per cent. above that of the year preceding, is indicative of improved and more healthful business conditions, and when considered in connection with the prosperous state of business in the East, bodes well for a year of much greater activity in 1913.

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Illinois

MARTIN BOLT*

The coal production of Illinois reached the highest point in the history of the industry during the year ending June 30th, 1912. The total tonnage amounted to 57,685,700 tons, an increase over 1911 of 7,349,141 tons. This increase is the more remarkable when it is considered that the shipping mines, which produce 97½ per cent. of the total product, have decreased in number.

While the number of men employed and the number of days worked have increased for the year, the rate is not in proportion to the increased product. The average daily output for each man employed is 4.27 tons, while 3.87 tons was the daily average for 1911.

There has been a considerable increase in the number of mines using machines, in the number of machines in use and in tons undercut. The increase in machine mines is 13; while increase in machines themselves is 151 and in tons undercut is 5,551,760. This method of mining has steadily increased from year to year until more than 44 per cent. of the total output is mined in this way.

ACCIDENTS

The number of men killed while in the discharge of duty was 180, and 800 men were injured so as to lose 30 or more days from their employment. The increase in number of fatal casualties is in exact proportion to the increase in tonnage which is 14.6 per cent. Most of the accidents in the mines in Illinois are caused by falling coal and rock and by mine cars and motors.

There are no reports on the mines for the last half of the year 1912, except in a general way and these indicate a healthy activity in all sections where coal is produced in large quantities. The tonnage produced in the last half of 1911 was nearly 31½ million tons and there is no reason for estimating the output at less than that figure for the same period this year. It will probably reach a higher point, if the same rate of increase is maintained.

The activity is due largely to the fact that an early agreement between the operators and miners in regard to the wage scale was reached, thereby giving the operator a better opportnity to secure contracts for the year.

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Idaho

BY ROBERT N. BELL†

There are several scattered deposits of tertiary lignite in the state that have in no place proven of commercial value so far, and are confined to small ancient lake-bed areas and margins.

In the Teton Basin in Fremont County, a limited area of the rich coal bearing cretaceous formations of Western Wyoming extends across the Idaho state line and embraces a few townships. In one of these, at Horse Shoe Creek, some interesting coal deposits are under slow process of development and have been tested to sufficient extent to warrant the anticipation of an important local supply of desirable coal in the near future. The most extensive point of development has been on the Brown Bear claim, and all that has been done has been by the original discoverers without any outside capital.

This property has been developed by two crosscut tunnels at a total depth of 200 ft. From the bottom tunnel, entries have been run out on the seam 1000 ft. in each direction. The total extent of the development exceeds 5000 ft. on this property, during the progress of which several thousand tons of coal have been produced, and sold to the local agricultural settlers of the vicinity.

The average analysis of this coal is as follows:

Moisture	3.60%
Volatile Carbon	36.63%
Fixed Carbon	55.42%
Sulphur	0.15%
Ash	4.20%

This seam and in fact the whole series has been somewhat disturbed by vertical cross faults that cut the bed clean and displaced them in steps varying from the thickness of the seam up to 30 ft. The only serious effect of these displacements is the softening of the coal in their immediate vicinity where they carry water. The faults, however, are usually clean-cut, filled with a narrow clay gouge and when these are passed the bed continues in its usual clean and uniform condition.

The series of veins to which this 5-ft. seam belongs is traceable for over two miles along the foothill slopes by shallow surface work, and in this distance much more serious displacements along the east-west lines are in evidence.

On the adjoining Horse Shoe claim, a vein 11 ft. thick, containing 10 ft. of the same clean high-grade sub-bituminous coal and a foot of white clay in the center of it has been drifted upon by an adit entry for 500 ft.

The Horse Shoe claim has several thousand feet of similar shallow entry work on three other smaller veins, 3 ft. and over, all of which carry similar high analysis to that of the Brown Bear claim.

This coal is a blocky, lustrous black fuel, very similar to the product of the Western Wyoming mines. It works well by blasting off the solid to a loose end. It carries well and has good storing qualities, and makes a splendid steam coal, giving a long oily flame.

The property has been examined by some practical coal men, including some excellent authorities, and the minimum estimate of the resources of two 640-acre claims which have been filed upon above a drainage-tunnel site that would cut the main series at a depth of 500 ft. is 5,000,000 tons.

During the progress of its development, this property has been situated 35 miles from the nearest railroad transportation. Recently, however, a branch of the Oregon Short Line R.R. has been completed to within 10 miles of these deposits for the accommodation of the extensive agricultural interests that border the field in all directions. A survey line has been extended up to the coal

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†Mine inspector, Boisé, Idaho.

mines and a spur railway could be constructed on a very easy grade.

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Indiana

By Frank I. Pearce*

The mining situation in Indiana during the fiscal year ending Sept. 30, 1912 was peculiar in some respects. The first half of October, the demand for coal began to improve somewhat, and from this period to Dec. 30, 1911, the mines averaged a little better than half time. A number that were closed down earlier in the year resumed operations.

From Jan. 1 to the latter part of March, demands for coal were fairly good, and the mines generally were operated better than three-fourths time. The market conditions during the latter period were strengthened somewhat, due to the wage agreement between the miners and operators, expiring on Mar. 31, and with its expiration the likelihood of a lengthy suspension of work at the mines.

All of the mines in Indiana, except one or two very small producing mines, stopped work Apr. 1, 1912, pending a settlement of the wage agreement. Work in the bituminous field was not resumed until June 1, and in the block coal field June 10, 1912.

Both wage agreements were bitterly contested, and before a settlement was finally reached it was necessary to submit them to the miners for a referendum vote. The agreements submitted to the miners were carried by overwhelming majorities, giving to the Indiana miners the highest price ever paid for mining coal.

Immediately on the signing of the wage agreements a few of the mines resumed operations, but at most of them considerable repairs and cleaning up had to be done, and as a result it took several days to restore them to their normal condition.

Production

Notwithstanding the two months' suspension pending the adjustment of the wage agreement and a number of days lost at some of the mines on account of car shortages and a number of local strikes, the total production for the year was 14,204,578 short tons. The total production of bituminous coal was 13,690,878 tons, while the tonnage of block coal reached 513,700.

A fraction over 51.8 per cent. of this was mined by machines, the electric chain cutters predominating. In only one year (1910) in the history of the state was this production excelled, when the miners of Illinois were on strike for seven months, giving Indiana the opportunity of additional markets north and northwest. These could not have been reached if the mines in Illinois had been working.

Distribution of Product

In Indiana, 8,023,701 tons of the bituminous coal were consumed during the year; 5,667,177 tons were shipped to other states. A fraction over 57.88 per cent. was consumed in Indiana. This shows an increase of about 1 per cent. in the home consumption of the yearly production over any previous year. The aggregate wages reported for the year was $13,089,001.32.

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Cost of Production

The aggregate wages reported from the bituminous field was $12,302,947.71, making a fraction over 0.898c. per ton for the labor cost for the total production of bituminous coal. The total wages reported from the block coal field was $786,053.61, or a fraction over $1.53 per ton for the labor cost for the total production of block coal. There was a considerable increase in the labor cost per ton for total production of both the bituminous and block coal over any previous year.

There are many things which are contributing to increase the cost of producing a ton of coal and necessarily adding cost to the selling price of a ton of coal. Increased wages is an important factor. Deeper mining and increased cost of keeping the mines in proper condition, more efficient safety appliances to protect life and health, increased cost of timber and all kinds of material used in a mine all contribute to the cost of production.

Market Prices

The market prices for bituminous coal during the period from Oct. 1 to Dec. 30, 1911 (except yearly contracts) ranged from $1.00 to $1.35 per ton for mine-run bituminous coal (f.o.b. mine) and for screened block coal from $1.90 to $2.25 per ton (f.o.b. mines).

From Jan. 1 to March 30, 1912, selling prices for mine-run bituminous coal (except yearly contracts) ranged from $1.35 to $1.90 per ton (f.o.b. mine) and the the price of screened block coal ranged from $2.25 to $2.75 per ton (f.o.b. mine). The higher prices paid during this latter period, were due to the 2-year wage agreement between the miners and operators, which expired on the last day of March and with its expiration came the likelihood of a lengthy suspension of work at the mines.

From June 1 to Sept. 30, 1912, the selling price of mine-run bituminous coal (except yearly contracts) ranged from $1.15 to $1.20 (f.o.b. mines), and for screen block coal the prices ranged from $2.05 to $2.20 (f.o.b mine).

Average Wages of Employees

The total number of employees reported for the year was 21,230, an increase of 452 over the first nine months of the year 1911. Of this number 19,703 were bituminous and 1527 block-coal employees.

The total wages reported from the bituminous field being $12,302,947.71, show an average earning of $624.42 for each bituminous employee, and the total wages paid to block-mine employees being $786,053.61, show an average earning of $514.77; the aggregate wages for the state being $13,089,001.32, and the total number of employees in the state 21,230, show an average earning of $616.53 for each mine employee in the state.

Nine new mines, and other seams in seven mines already in operation, were opened up. Eighteen mines, and the seams worked by three others, were abandoned during the year ending Sept. 30, 1912.

Fatalities

During the year there were thirty-seven fatal accidents. This large loss of life we deeply deplore. We feel somewhat gratified, however, with the fact that only in one year, 1899, to our knowledge, has the number of tons of

coal per fatality been excelled, and that our yearly report also shows that in 1912 fewer persons were killed per thousand employed than in any other year with the exception of 1903 and 1906.

Iowa

By L. E. Stamm*

In reviewing the coal mining industry of Iowa for 1912, it will not be possible for me to give the exact figures as to coal production, number of employees, etc., for the calendar year ending Dec. 31, 1912. This condition is due to the fact that since the establishment of the department of state mine inspection, it has been the custom as well as the law to collect all statistical data relating to the coal mining industry of the state for the fiscal year ending June 30. The law requires a report to be made to the governor biennially, just prior to the assembling of the state legislature.

Coal has been mined in Iowa since 1840, the first coal being mined several years prior to Iowa becoming a state. During the first several years that coal was produced, the output was small and was mined only for domestic use. Later, with the growth in population and the advent of the railroads in the state, the production increased each year, and considerable coal was shipped to the North and West.

For a number of years Iowa was the second largest coal-producing state west of the Mississippi river. From the time that coal was first mined until the year 1900, the output increased each year steadily until in the year 1900 the output of the state had increased to more than five million tons.

From 1900 to 1906 the production each year was more than six million tons. Since then the tonnage produced by the state has reached more than 7,000,000 tons each year until the fiscal year ending June 30, 1912, when the output was slightly under the seven million mark.

The State Geological Department is authority for the statement that the Iowa coal field contains about 19,000 square miles, possibly two-thirds of which in time may become productive. These figures do not take into consideration that portion of the most productive formation, the lower Pennsylvania (Des Moines) which is covered by the Cretaceous, and the upper Pennsylvania (Missouri) which will certainly become in part productive.

Mr. Campbell, of the United States Geological Survey, estimates the original coal supply of Iowa at 29,160,000,000 tons. Subtracting the 177,884,461 tons mined from 1840 to June 30, 1912, from the original supply, we still have left more than 4000 times the production of 1912. If the present ratio of a half a ton lost for every ton marketed continues, the supply will last nearly 2750 years at the present rate of production of about 7,000,000 tons per year.

I believe that it will be safe to say that the production for the calendar year 1912 will approximate that for the fiscal year.

The coal industry of Iowa has added much to the material wealth of the state. The mining of coal has brought manufacturing industries into Iowa because of the cheap fuel furnished. It has added to the population of the state, as the industry now gives employment to more than 17,000 people. Aside from this it provides cheap fuel which is an important item in the state's welfare.

Development work is progressing in the new mines in Marion county along the new extension of the Rock Island Railroad from Des Moines to Allerton. These new mines will add much to the output of the Second District this coming year. New mines are also being developed in Monroe and Polk counties. Owing to the warm weather which has prevailed this fall the work in mining has been but fair, but from now until March the mines of Iowa will run at their full capacity.

During the last year there have been but few labor troubles affecting the production of coal. Local strikes or difficulties were usually settled within a day or two, and none of these at any time seriously affected the output of coal. Such troubles as arose at the mines were usually caused by a difference of opinion as to the construction to be placed on the agreement between the miners and operators.

An agreement between the miners and operators of Iowa as to wages and working conditions in and around the mines of this state and extending until Apr. 1, 1914, was entered into the latter part of last May, thus giving assurance that the coal industry of Iowa will be free from serious disagreements or disturbances between the contracting parties during the life of the agreement. We therefore look forward to an increased tonnage in this state for the year 1913.

*Secretary, Iowa Mine Inspectors, Des Moines, Iowa.

Kansas

By Leon Besson*

The year ending Dec. 31, 1912, was one of the most prosperous recorded in the mining industry of the state. The coal production will exceed the output of 1911 by almost 700,000 tons, and will reach near the 7,000,000-ton mark.

The increase in production in Kansas for the year just ended can be attributed to two causes: First, the negotiating of a wage contract without any resort to strikes or shutdowns. Second, to the decrease in output of natural gas and an increase in the price of fuel oil.

There were 27 fatal accidents during the year, most of which were caused by falls of rock. This is a considerable decrease from last year.

Crawford County ranks first in point of coal production,, producing more than half the output of the state. Cherokee County ranks second in the matter of coal output.

Kansas (By Special Correspondent)—The past year has been fairly prosperous in the State of Kansas. The trade was brisk during the early months of the year, due to anticipated labor troubles after the expiration of the wage agreement on Apr. 1. However, such troubles did not develop and aside from a few local strikes, the situation is quiet. The trade was materially stimulated during the last half of the year by a marked increase in the price of fuel oil and a decrease in natural-gas supply, which two fuels have been the cause of quiet business in this state for the past two years. Both steam and domestic business have been benefited by this change

*State mine inspector, Pittsburg, Kan.

in conditions, but more particularly has the demand for steam coal been stimulated. During the latter weeks of the year some fancy prices were realized for slack coal which is unusual at this period.

Steam Shovels Introduced

The year has been noted for the introduction in this state of steam shovels, which are used for "stripping" coal near the outcrop. There are now sixteen of these giant dirt movers in the Pittsburgh, Kan., field. They each have an average capacity of about 250 tons of coal per day when the coal is 3 ft. in thickness, with an average of 20 ft. of cover.

There has not been much progress made in the way of introducing mining machines in the deep shaft mines, but it is predicted that more will be done in this respect in the near future, as the growing practice of the miners of shooting the coal with dynamite will likely force the operators to the use of machines in order to get some lump coal from their product.

Fatal accidents have been few, although slight personal injuries seem to have been quite numerous.

Development of several new properties in Crawford County has commenced, and 1913 should show a good increase in tonnage unless the mild winter which marked the close of 1912 continues on into the early months of the new year.

There has been little change in ownership of properties, the largest transaction being the purchase of The Fidelity Coal & Mining Co.'s properties by The Mayer Coal Co.

The state produced considerably more than 6,000,000 short tons during the year and furnished employment to 12,000 men, with an average working time of about 220 days.

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Kentucky

By C. J. Norwood*

Based on the returns for 11 months ending Dec. 1, the output of coal for the state of Kentucky will be approximately 15,500,000 tons. Estimating the production by districts, we have as follows: Western district, 7,435,500 short tons; southeastern, 4,880,900 short tons; northeastern, 3,163,100 short tons, making a total of 15,479,500 short tons.

This indicates an increase of more than 1,550,000 tons over the commercial output for 1911, and an increase of about 760,000 tons over that for 1910. The latter year held the highest record up to the year 1912.

A complete record of the mine fatalities has not yet been received. Indications, however, show that during 1912 there was a material reduction in the number of deaths from falls of roof. Five deaths from electric shock have been reported, and five persons were killed by a dust explosion in the Central mine. A gas explosion in the Coil mine also resulted in the death of five miners.

This record is as complete as it can be at the present day. The figures are made up from the monthly reports.

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Maryland

By William Walters†

It is gratifying to find Maryland still in the 4,000,000 column. Business during the year 1912 has been quite favorable. There was a period of dullness in May and June, but despite the fact, there will be an increase in tonnage over 1911. The production in that year was 4,166,236 tons. The mining companies report an increase for 1912, and I estimate the total will be 4,500,000 gross tons.

The Consolidation Coal Co. will produce about 2,166,000 tons. This corporation is the largest coal company in Maryland. The Georges Creek Coal Co., Inc., reports 244,000, an increase of 66,000 tons. The Piedmont & Georges Creek Coal Co. reports 287,558, an increase over last year of 73,289 tons. The New York Mining Co. reports 265,000, a 66,000 increase. The New Central Coal Co. reports 90,731, an increase of 10,000. Likewise the Maryland Coal Co. has increased its tonnage.

The following list comprises the new coal-mining companies organized during the year: Maryland-Georges Creek Coal Co., Mertins Bros., managers; Allegheny Coal Co., Edwin Roberts, manager; Moscow Iron Co., of Barton, Oscar Batdorff, manager; and the Ajex Coal Co., with James G. Pugh, president. The latter mines are situated in Garrett County, Maryland.

Eleven fatal accidents occurred during the first eight months of the fiscal year, commencing May 1, 1912.

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Montana

By J. B. McDermott*

The total tonnage produced in Montana for the year ending Oct. 31, 1912, was 3,143,799 tons, valued at $5,600,097. The number of men employed inside was 3057, and outside, 541; while the average number of working days was 195.

The number of fatal accidents was less this year than last, a total of ten against thirteen last year; but the production was the largest reported for a like period in the history of the state.

Many improvements have taken place during the past year for the betterment of the producing end of the business and there is an incentive for still greater activity along these lines. With nearly one million tons entering the state, competing for local trade, together with the fact that Montana is favorably situated to enter other fields, it looks as if there was considerable business that could be gotten with the proper endeavor.

TABLE I. NUMBER OF COAL MINES; NUMBER OF DAYS OPERATED; COAL HAND MINED AND SHOT OFF SOLID; MACHINE MINED; VALUE OF PRODUCT AT MINES DURING 1912

County	Number of mines	Number of days operated	Hand mined and shot off solid	Machine mined	Value, selling price at mine
Valley	1	130	820		$1,027.00
Gallatin	1	138	3,687		5,588.00
Custer	1	190	4,527		13,031.00
Blaine	2	193.5	5,720.9		16,745.00
Fergus	4	213.7	4,947		11,867.50
Chouteau	2	276	10,086		24,223.50
Hill	5	194.4	16,687		38,864.22
Park	2	218.5	45,396		105,906.00
Cascade	16	191	226,054	624,803.6	1,338,975.89
Musselshell	5	200.4	732,144	201,341	1,680,273.00
Carbon	8	197.5	1,019,472	248,114	2,362,695.89
Total	47	Av. 195	2,069,540	1,074,258.6	$5,600,097.00
Total coal				3,143,798.6	

In the last published biennial report mention was made of some new properties opening up in what is known as the Roundup field. The mines were then, according to county lines, divided between Fergus and Yellowstone Counties, but are now in the baby county, Musselshell.

*Chief inspector, Lexington, Ky.
†Chief mine inspector, Midland, Md.

*Chief coal mine inspector, Helena, Mont.

TABLE III. OCCUPATIONS OF THOSE EMPLOYED IN AND AROUND COAL MINES IN MONTANA DURING 1912.

	Rope riders	Cagers	Drivers	Laborers	Machinemen	Loaders	Boys under ground	Boys above ground	Motormen and nippers	Miners	Shot firers	Timbermen	Trackmen	Trappers	Others under ground	All above ground	Total employees
Valley										4							4
Gallatin	1			1						9					3	5	19
Custer										6					1	1	8
Blaine			2							6							8
Fergus	1									10						1	12
Chouteau	1					7				11						8	27
Hill			4			1				22			1		1	3	32
Park	2		2	5			1	2		63		1	1	1	3	16	97
Cascade	10		72	27	137	185	5	15		255	15	21	22	14	46	173	997
Musselshell	2	2	72	16	10	150	4		8	449		10	18	1	44	101	886
Carbon	11		43	58	34	220	1	12	41	703	1	51	37	3	60	233	1508
Total	28	2	195	106	181	563	11	29	49	1538	16	83	79	19	158	541	3598

The latter, instead of being a helpless infant this year, stands the second largest producing county in the state; Cascade, which for many years led in the production of coal, gave up first place to Carbon in 1909, and second place to Musselshell this year.

The labor unions throughout the state of Montana are agitating the subject of workmen's compensation and have practically agreed to adopt the Washington law as a model. This will probably be welcomed by the majority of coal-producing operators of the state.

The Madison and Missouri Rivers are being harnessed up and power lines at many points, especially along the Missouri River, are branching out and entering many towns that were prairies five years ago. Not only are the power companies supplying the rural districts with light and power, but several coal properties in Cascade County have been connected and are utilizing the power for light, haulage and pumping. In one instance electricity is being used for running undercutting pneumelectric punching machines to prepare the coal.

The following is a list of equipment used for undercutting the coal mines in Montana:

12 Ingersoll Puncher machines (Compressed air power)
26 Harrison Puncher machines (Compressed air power)
1 Sullivan Puncher machine (Compressed air power)
3 Sullivan Post Puncher machines (Compressed air power)
7 Sullivan Electric shortwall machines
11 Jeffrey Electric shortwall machines
11 Goodman Electric shortwall machines

There were less mining machines used in 1912 than in 1911, in spite of the fact that some mines are equipping with them this period and did not have them last. The decrease is accounted for by the decline of one of the larger coal mines in Cascade County, which reported 14 machines in use in 1911 and only 7 in 1912.

The number of motors in use in our coal mines in 1912 is reported as follows:

1 Whitcomb Gasoline motor
4 Goodman Electric motors
2 Jeffrey Electric motors
1 Link-Belt Electric motor
17 General Electric motors

Total 24 Electric and 1 Gasoline motors.

Rope haulage is being used in several mines in Cascade County, at 2 mines in San Coulee, and 2 mines in Stockett.

New Mexico

By Rees H. Beddow*

The law creating the office of state mine inspector became operative Sept. 13, 1912, and I was appointed inspector Sept. 25, so there has not been sufficient time since my appointment for me to become thoroughly familiar with the conditions existing at the mines throughout the state, nor to give an elaborate review of the industry for the year 1912.

*State mine inspector, Gallup, N. M.

We have 47 mines producing coal, ranging from the small country bank to large modern collieries employing hundreds of men, and equipped with the best machinery for extracting the coal, and preparing it for market, and where the latest and most improved methods of mining are adopted. On account of the favorable natural conditions, the industry has been conducted with few catastrophes or fatal accidents.

The production of the mines consists of anthracite, bituminous coal and sub-bituminous, which latter may be termed a high grade of lignite coal. Part of the bituminous coal is well suited for coking and blacksmithing. The production of each kind of coal for the year 1912, is as follows:

OUTPUT ETC. OF NEW MEXICO, 1912

Anthracite	47,892 tons
Bituminous	2,657,169 tons
Sub-bituminous	712,032 tons
Total	3,417,093 tons
Coke	400,180 tons
Number of employees in and about the mines	3,650
Number of fatal accidents	14
Number of tons of coal mined for each life lost	244,078
Number of employees for each life lost	261
Number killed for each thousand employed	3.83

There have been no explosions or catastrophes of any kind; all the fatal accidents were caused by falls of coal or slate or by mine cars and motors. Owing to the large amount of territory in the Southwest which is supplied from the mines of New Mexico, the demand for coal is good, and the greater part of the year the output is limited only by the number of miners who can be secured and by the number of coal cars supplied by the railroad companies.

Fuel oil has been a strong competitor with coal in this field, and lessened the demand by fully 50 per cent., but it seems certain that fuel oil will soon become so scarce that it will not pay to use it as a fuel. Then the output of the mines will be doubled. As we have all the different kinds of coal, of superior quality, we should be able to compete with all neighboring coal regions.

North Dakota

By J. W. Bliss

The production of lignite in North Dakota during 1912, was 545,000 tons, or 14 per cent. more than was produced in 1911 and a greater amount than has ever been mined in any one year during the history of the state.

It is to be remembered that as a coal-producing state, North Dakota is very young. Lignite cannot be shipped great distances or held in storage for other than short periods on account of its moisture content, which is comparatively high.

Furthermore, until recently, only three main lines

*Assistant State Engineer, Bismarck, N. D.

passed through the western part of the state, giving shipping facilities to but four coal-producing localities. Practically the entire lignite-bearing area was inaccessible to shipping points. Further, that portion of the state west and south of the Missouri was given over to grazing purposes, and settlers were few and far between. Now this section of the state is becoming ramified with railroads and homesteaders have taken all of the available land, and as a result lignite mining has received a considerable stimulus.

During the past year, 105 mines were operated. Some of these shipped but a portion of the fall and winter, others operate the year around, part of the time working double shifts. All of the mines are developed either on a single or double entry method of room-and-pillar work. The beds of coal vary from 3 to 19 ft. in thickness, occurring at depths of from 5 ft. to 200 ft. Where the over-burden is light the coal is mined by stripping.

As a general rule, beds of coal which are not thick enough to permit of coal to be left for the roof, are not worked by underground methods, on account of the cost of timbering. Practically all of the timber used underground consists of posts of cedar and tamarack shipped from Minnesota and Wisconsin. Local timber, such as cottonwood, elm and ash is available only in a few instances.

No Fatalities Occurred

An average of 1300 miners were employed during the winter months, while 400 was the average for the summer. The state was especially fortunate in that no fatalities occurred during the year, and very few serious or minor accidents have been reported. In none of the mines is there any explosive gas, although black damp is occasionally found, and lignite dust does not create a dangerous condition. Lignite being slightly resilient, the coal ordinarily left to support the roof usually gives ample warning of fall. Thus lignite mining is a comparatively safe occupation.

Briquetting is a subject of much interest to mine owners, and the experimental station maintained at Hebron is performing work along this line that must be of ultimate economic value to the industry.

Lignite has thus far only been used on the grate. However, it is now established beyond question that it possesses great possibilities for the manufacture of gas, while in the gas-producer engine it is especially efficient as a fuel.

Ohio

By J. C. Davies*

Reports received from all the coal-mining districts of the state point to an increase in tonnage over the year 1911. In some districts the increase will amount to 10 per cent., in some 8, while in others it may only be 5 per cent.

While the tonnage for the year may not reach that of the year 1910, which was approximately 34,500,000 tons, it will, in all probability, increase from two to three million tons over that of the year 1911, when it amounted to 30,342,039 tons.

*Chief inspector of mines, Columbus, Ohio.

Car Shortage

The tonnage for the year 1912 would undoubtedly have been much greater had the mines not been handicapped by an insufficient number of cars to move the product. The car shortage for the winter months of the year 1912, was the worst experienced in years, in fact a coal famine was threatened, which only seems to have been averted by the unusual climatic conditions, which rendered the situation less acute.

The situation became so serious that an investigation was made at the instigation of the Public Utilities Commission of the state, and while their report has not been completed, the investigation has so far developed the fact that while there was no doubt as to the existence of a car shortage, it was due largely to the inability of railroads to move them, from some cause, from one point to another after they were loaded and discharged. The output of eastern Ohio would have been much greater had it not been for this drawback. The Hocking Valley operators did not suffer to so great an extent from this cause as did those in other parts of the state.

Statistics

The number of employees in the mines of the state will not be materially changed from that in the year 1911, when it comprised some 48,000 persons.

The average time worked in the mines of the state will vary in different districts. In some it will average one-half, in others two-thirds, while in some it will amount to three-fourths of full time.

The highest price ever paid for producing the coal ready for the market was made possible by a wage agreement entered into between the miners and operators of the state for a period of two years, commencing Apr. 1, 1912, and ending Mar. 31, 1914. An increase of 5c. was granted on pick-mined, screened lump coal, and 4c. on machine-mined, screened lump coal per ton, 3½c. of which was an increase on the wages of the loaders, while the ½c. was added to the wages of the machine runner.

No important strikes occurred during the year. The wage-scale agreement which will last for a period of two years makes strikes of state-wide importance almost an impossibility.

Increase in Accidents, Many Mine Fires

Up to Dec. 27, 133 fatal accidents have been reported, which is an increase of twenty-four over the year 1911. Ninety-nine were due to falls of roof and coal, and accidents due to mine cars increased from 8 to 13.

While no explosions or mine catastrophes of any importance occurred in the mines of the state during the year, the greatest care and precaution have been necessary in order to prevent such unfortunate events on account of mine fires breaking out in many of the large mines; good judgment, however, was exercised in handling them, and one mine which is considered unusually dangerous, is now sealed up and will not be reopened until every vestige of fire has been extinguished and there is no possible danger to life or property.

Twenty violations of the mining laws were reported during the year, and fines amounting to $170 were assessed. One mine official was arrested for not supplying the required amount of ventilation; the other offenders were mine employees. Eight machine runners were prose-

cuted for not having the necessary shield on the machines, as required by law. Other offences were: Riding on mine-car trips, 3; using impure oil, 3; using steel tamping tools, 2; crossing a danger signal, 1; and conveying powder while the electric current was on the wires, 1.

The outlook for the year 1913 is exceedingly promising, especially if present conditions prevail; and if industrial and manufacturing concerns maintain their present activities, this year should be even more prosperous than 1912, and in consequence, coal, which is our prime commodity, will also increase in tonnage. The year 1912 from many standpoints was a most unusual one, and notwithstanding the fact that it was a presidential year, the coal trade did not suffer.

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Oklahoma

By L. C. Snider*

All the coal in Oklahoma lies in the eastern portion of the State and the greater part of the deposit is in an area comprising parts of five or six counties in the east-central section. This main area is underlaid by seven workable seams of coal. A belt runs from this area north to the Kansas line. It has three or four beds of coal, which are mined by underground workings in the south end of the belt and stripped by steam shovels at the end near the Kansas line. The area is thus continuous with the Kansas field to the north and the Arkansas field to the east. The coal from the different seams does not vary to any great extent. All supply a good quality of bituminous coal.

The production of coal began to be recorded in 1880 when 120,947 tons were produced. The production gradually increased until 1903 when the output rose to over 3½ million tons. Since 1903 the production has remained nearly stationary at very near 3 million tons except in 1907 when it reached 3,642,658 tons, with a value of $6,253,567 the greatest output for any year up to the present. Since 1907 the yearly output has been as follows:

OUTPUT OF COAL IN OKLAHOMA

Year	Quantity	Value
1908	2,948,116	$5,976,504
1909	3,119,377	6,253,367
1910	2,646,226	5,867,947
1911	3,074,242	6,291,494

The principal causes for the lack of development during this period have been the strong competition of gas and fuel oil in adjacent territory and the mining and labor conditions which make the production cost higher than it is in other states so that coal from other fields can compete with the Oklahoma coal inside the state in spite of the difference in freight rates.

During 1912 the trade conditions have been somewhat better than in 1911 and a substantial though not a phenomenal increase is promised. From preliminary reports the indications are that the production will be in the neighborhood of 400,000 tons greater than that of 1911, which will make it between 3,400,000 and 3,500,000 tons. The value at the mine ruled a few cents less per ton than in the previous year, but the value for 1912 should be about $6,750,000 thus establishing a new high record for values.

*Geological Survey of Oklahoma, Norman, Okla.

Pennsylvania

By Frank Hall*

Pennsylvania will attain to still greater distinction this year as a coal-producing territory by reason of the fact that the bituminous output will reach the unprecedented volume of 150,000,000 net tons, the largest annual production in the history of the industry. The anthracite output may reach 85,000,000 net tons, making a total of 235,000,000 net tons.

In both regions a shortage in the car supply lessened the shipments to some extent. In the bituminous region the complaint has been loud and persistent regarding this check to trade. The inability of many of the mines to obtain sufficient labor has also tended to restrict the output.

In the anthracite region, many of the mines have reached their maximum capacity and some of them have passed beyond that point, and it may therefore be predicted that the future annual production will never greatly exceed the output of the present year. The culm banks, which have been furnishing a great deal of marketable coal of the smaller sizes, are about exhausted, and thus less coal of this grade will be marketed in the future.

Important Reduction of Accidents in Bituminous Field

In the bituminous region, the number of employees was approximately 185,000, and the number of fatal accidents in that region will total to about 450, a decrease from last year, when the number was 515. The number of days worked was about 235. In the anthracite region, the number of employees was approximately 174,000, and the number of fatal accidents will total about 600, a slight decrease from last year. The number of days worked was about 220.

The number of accidents which occur in mining operations are unfortunately increased by the rushing methods of operation which naturally result after the mines have been idle for a period of several weeks and the supply of coal approaches exhaustion. The strenuous effort made to extract enough coal to meet the demand at such times adds greatly to the hazard of an occupation that is fraught with danger even if the operations are carried on with the greatest care.

There were, however, no accidents of unusual magnitude. Several mine fires occurred, but they were only moderately destructive. Two floods of the character of cloud-bursts caused the destruction of much property in the Fifth, Seventeenth and Twenty-sixth Bituminous Districts. In addition to the property loss in the Fifth District, 18 mine employees were drowned.

The production of coke will probably reach 22,000,000 tons, the year closing with business extremely brisk and prices satisfactory. The same may be said of the coal industry, and the prospects for the coming year for both lines of trade seem to be extremely bright.

The anthracite production would no doubt have been greater had not a suspension of about seven weeks occurred during the months of April and May, pending the settlement of the differences between the miners and the operators and the signing of an agreement for the coming year. The bituminous trade was not much disturbed by strikes, although some local suspensions of activity occurred for short periods.

*Deputy to the chief mine inspector, Pennsylvania Department of Mines, Harrisburg, Penn.

Industrial Developments of the Past Year

The operators generally have been making more improvements than usual about the mines, and in accordance with the act of June 15, 1911, all inside buildings have been made incombustible. Many mines also are now equipped with the most modern and complete electrical haulage apparatus and lighting system.

One notable feature in the bituminous industry has been the recent acquisition by the Pittsburgh Coal Co. of the mines of the Monongahela River Consolidated Coal & Coke Co. and the New York & Cleveland Gas Coal Co. This addition to the present operations of the Pittsburgh Coal Co. will give it a daily capacity of 100,000 tons.

In the anthracite region two new mines were opened during the year, both in the Sixth District. In the bituminous region 46 were opened, 2 in the 2d District, 6 in the 3d, 6 in the 4th, 1 in the 5th, 1 in the 6th, 4 in the 8th, 3 in the 12th, 1 in the 17th, 6 in the 18th, 4 in the 20th, 1 in the 21st, 3 in the 23d, 3 in the 24th and 5 in the 25th.

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Tennessee

By Geo. E. Sylvester*

The 1912 output is probably not materially different than for several years past. This year has been free from any general disaster, and the death rate has been materially lowered, being only eighteen from inside accidents. There was but little labor trouble during the past 12 months, although many of the mines ran on short time at various periods on account of dull season or car shortage. Business with the mines at present is good, and practically all companies are running full time.

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Utah

By J. E. Pettit†

We close the fiscal year Nov. 30, 1912, with the largest increase in output of coal and coke for any one year in the history of the state. The output of coal increased 586,885 tons, or 23.46 per cent., and the coke production was augmented by 134,988 tons, or 63.56 per cent., but the extraction of hydrocarbon minerals other than coal decreased 3393.69 tons, or 9.1 per cent.

The most important reason given for the large increase in coal has been the demand for our coke. During the past year, 603,446 tons of coal were used in the manufacture of coke against 365,822 tons for 1911. The increase in the use of coal in the state for the past year is also noticeable. The amount used in 1911 was 2,124,500 tons, and in 1912, 2,466,745 tons, while our exports to neighboring states increased from 418,671 tons to 463,349 tons in the same period of time.

Increased Demand from Smelters

The distribution of coke provides some interesting figures. The Nevada smelters received 31,563 tons, against 335 tons in 1911. The Montana smelters increased their order from 86,714 tons to 135,865 tons. Idaho used 894 tons for that purpose, while Utah increased her smelter demand from 123,752 tons in 1911 to 176,426 tons in 1912.

The decrease in the output of the hydrocarbon product is due to peculiar Eastern conditions, by which its market is governed. The sale of this mineral seems to be intermittent, one month the mines are working to full capacity, the next month the forces are reduced.

We have had no labor troubles during the past year. The wages of those employed in and around the mines and coke plants remained practically the same as in the previous 12 months, and, from close observation, we are convinced that a good feeling exists between employer and employed.

The selling price of coal remained the same as in 1911; however, the market price for the hydrocarbon mineral is somewhat lower. No serious shortage of cars has been reported during the year, except in latter part of September and October.

New Developments in Utah

Three new coal properties, viz., the Willow Creek mine, operated by the Utah Fuel Co.; the Panther Cañon or Cameron mine, operated by the Castle Gate Coal Co., and the Neslen mine, operated by the American Fuel Co., have been added to the list of shippers during the past year.

The Storrs mine, being developed and equipped by the Spring Cañon Coal Co., will be shipping coal by Feb. 1. A railroad four and one-half miles in length has been built to the mine connecting with the main line of the Denver & Rio Grande R.R. Co., one-half mile west of Helper.

A new contrivance (for the Western states) in handling coal from the mine to the tipple is being installed at this mine. The coal outcrops on a bluff several hundred feet above the bed of the cañon. Because the grade is so steep that the railroad cannot approach within 3600 ft. of the mine opening, it was decided to transport the coal this distance by an aërial tramway, which is in course of erection.

It has been impossible for the state mine inspector to visit all the coal and hydrocarbon mines of the state as required by law, owing to the increase of new mines and the development of the old producers, separated as they are from one another by long distances. All the large operating mines have been visited. Those which were not inspected were mines in Iron and Uinta counties, and these are only in operation for a few months of the winter season. During the past 60 days, G. B. Smith has been employed as deputy state mine inspector.

Statistics

The coal production for 1912 was 3,088,356 tons, making an increase of 586,885 tons over that of the preceding year. The coke production was 347,356 tons, an increase of 134,988 tons. The hydrocarbon production was 33,656.31 tons, or a decrease of 3393.69 tons.

The miners used 351,505 lb. of black powder and 395,218 lb. of giant and permissible powders, a total of 746,723 lb., or about one pound of powder for every 4.13 tons of coal mined.

The men employed in and around the collieries, hydrocarbon mines and coke plants, aggregated 4063 during the year, or an increase of 265 men over those employed in 1911. The average number of days worked by the regular producing mines was 280 days.

*Chief mine inspector, Nashville, Tenn.

†State mine inspector, 501 Dooly Block, Salt Lake City, Utah.

The average amount of coal produced per man (including miners, daymen and outside men, but not including coke workers) was 770 tons. Six mine foremen's certificates were issued and three certificates were awarded to firebosses.

There were 160 accidents in and around the coal and hydrocarbon mines during the past year. Eighteen resulted fatally, 31 were serious, and 111 non-serious. Two of the fatal accidents occurred outside of the mines, one in an open rock cut, and one in an engine house.

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West Virginia

By John Laing*

On account of the unsettled labor conditions in this state during the past few months and also because of the inadequacy of the car supply which has been extremely short, the production of West Virginia has been much constricted. However, as will be seen, we produced a little over five and one-half million more tons gross in 1912 than we did in the preceding twelve months. I believe that had it not been for the labor troubles and the short car supply that the production in the calendar year would have been at least 63,000,000 gross tons, but, as it is, I think we produced approximately 60,000,000.

Including superintendents, mine foremen, fire bosses, store and office clerks, there are 79,781 persons employed directly in and around the mines of this state. The mines have operated 218 days during the calendar year 1912.

Many improvements have been made at the various mines throughout the state and about 25 new mines have been opened; 38 power plants installed; 30 to 35 uptodate fans erected; 35 tipples built and 38 additional openings made at old mines.

West Virginia Only Beginning to Produce Coal

In my opinion, the development of the coal in this state is in its infancy. The next ten years will show such a marked improvement in the coal industry that the years prior to this will be almost entirely forgotten as periods of mining development in West Virginia. Furthermore, unless all signs fail, we will have the largest output of bituminous coal of any state in the Union.

The operators throughout the state report a marked improvement in the demand for West Virginia coal during the past year over that of the preceding 12 months, and the prices have advanced with the demand.

Statistics

The statistics which follow are for the fiscal year ending June 30, 1912: The total coal production during the fiscal year was 59,581,774 gross tons of coal or an increase of 5,548,588 gross tons over that of the year ending June 30, 1911, or 10.26 per cent. The coke production was 1,992,697 net tons, a decrease of 701,350 net tons under that of the year ending June 30, 1911, or 26.03 per cent.

The total value of the coal produced this year was $56,602,685.30 and the total value of the coke was $3,605,781,57. Thus the coal proudced, netted the operators an average of 95c. per ton, f.o.b. cars at mines, and the coke brought an average yield to the operators of $1.81 per ton at the same point.

*Chief of department of mines, Charleston, W. Va.

During the year the mines worked an average of 224 days, employing, includ ing superintendents, mine foremen, fire bosses, store managers, store and office clerks, miners and other mine workers, a total of 79,781 persons. Of this number there were approximately 50 per cent. white Americans and 13,403 negroes, the balance being foreign labor.

Accidents

There were 409 lives lost in connection with mine operations, 392 of which number were killed inside and 17 outside the mines. There were 840 nonfatal accidents, 759 of which occurred inside and 83 outside. This shows an increase of 79 fatal accidents and 21 nonfatal accidents over the preceding year. This increase was due to explosions in the Standard Pocahontas Coal Co.'s mine (Aug. 1, 1911), the Bottom Creek Coal & Coke Co.'s mine (Nov. 20, 1911), and in the Jed Coal & Coke Co.'s mine (Mar. 26, 1912). Had it not been for these unfortunate accidents, the number of persons killed and injured by usual causes would have been reduced substantially.

Exclusive of the lives lost in the explosions, most of the fatalities were caused by falls of roof and coal. We find that 85 per cent. of them are caused from carelessness.

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Rocky Mountain Coal Mining Institute

A local chapter was organized in Trinidad, Colo., Dec. 28, 1912, by a number of members of the Rocky Mountain Coal Mining Institute. The chapter is to be confined to members living in Las Animas County, Colo.

The following officers were chosen: J. S. Thompson, president; F. P. Bayles, vice-president; B. W. Snodgrass, secretary-treasurer. These, with J. E. McLaughlin and M. O. Danford, will constitute the executive committee. Other members present were W. J. Murray, D. J. Griffiths, R. McAllester, O. C. Cook, F. L. Miller and W. Morgan. It was decided to call the first regular meeting of the chapter on Jan. 25, 1913, and to notify all members residing in Las Animas County.

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Large Coal Mines

There are 735 coal mines in the United States that are producing more than 200,000 short tons of coal each annually. In 1911, according to a statement by Edward W. Parker, of the United States Geological Survey, 269 bituminous mines and 168 anthracite mines in Pennsylvania produced in excess of this amount. The average production of these Pennsylvania bituminous mines was 321,773 tons and of the anthracite mines 444,697 tons. The largest anthracite mine had a production of 1,020,420 long tons (1,142,870 short tons). The largest bituminous production from one mine (a Pennsylvania operation) was 1,285,483 short tons. Thirty anthracite mines produced over half a million tons each. Illinois was second to Pennsylvania in large mines, having 93 mines which produced more than 200,000 tons; West Virginia was third, with 59; and Ohio fourth, with 38. The total production of these 735 first-class mines was 253,459,639 tons, or 51.7 per cent of the total production of the country.

Coal and Coke Production in the United States

The following tables have been compiled largely from data communicated by the several state mine inspectors, estimates having been made only where no such statistics were available, but in all cases upon the basis of good information.

PRODUCTION OF COAL IN THE UNITED STATES

States	1911 Short tons	1912 Short tons
Bituminous:		
Alabama	15,040,267	18,500,000
Arkansas	1,950,700	2,120,000
California	5,000	2,500
Colorado	10,197,595	11,306,968
Georgia	165,330	150,000
Illinois	50,336,559	(b) 57,685,700
Indiana	14,209,661	(e) 14,940,628
Iowa	(b) 7,729,674	(b) 6,820,828
Kansas	6,390,207	6,850,000
Kentucky	13,929,450	15,479,500
Maryland	4,166,236	(a) 4,500,000
Michigan	1,476,074	(a) 1,550,000
Missouri	3,760,607	3,710,992
Montana	2,913,397	(d) 3,143,799
New Mexico	3,148,158	3,369,201
North Dakota	468,700	545,000
Ohio	30,342,039	(a) 32,700,000
Oklahoma	3,074,242	3,450,000
Oregon	45,000	48,200
Pennsylvania	144,754,163	150,000,000
Tennessee	6,451,208	(a) 6,522,000
Texas	1,974,593	(a) 2,000,000
Utah	2,501,471	3,088,356
Virginia	6,864,667	(a) 8,000,000
Washington	3,550,906	3,650,000
West Virginia	59,920,207	(a) 60,000,000
Wyoming	6,755,196	7,522,294
Total bituminous	402,121,307	427,655,966
Anthracite:		
Colorado	65,500	60,545
New Mexico	41,200	47,892
Pennsylvania	90,419,856	84,200,000
Total anthracite	90,526,556	84,308,437
Grand total	492,647,863	511,964,403

PRODUCTION OF COKE IN THE UNITED STATES

States	1911 Short tons	1912 Short tons
Alabama	3,172,102	3,050,000
Colorado	937,952	969,688
Georgia	48,515	47,200
Illinois	1,420,209	(a) 1,684,000
Kansas	10,000	8,000
Kentucky	71,907	89,100
Montana	62,504	68,400
New Mexico	379,203	400,180
Ohio	312,416	(a) 321,000
Oklahoma	39,707	(a) 40,000
Pennsylvania	22,460,917	28,492,275
Tennessee	341,009	345,000
Utah	212,368	347,356
Virginia	907,604	1,101,000
Washington	35,621	40,000
West Virginia	2,100,500	2,300,000
Other states	2,460,000	(c) 2,500,000
Total	34,972,534	41,803,199

(a) Estimated. (b) Fiscal year ending June 30. (c) Includes output of byproduct coke for Massachusetts, Maryland, Minnesota, New York, Michigan, Wisconsin. (d) Year ending Oct. 31. (e) Year ending Sept. 30.

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Coal Mine Accidents in Washington

By D. C. Botting* and H. M. Wolflin†

The death rate in the coal mines of Washington is considerably higher than in coal-mining states of the eastern and central part of the country. At first glance the reason for this is not evident. The percentage of English-speaking miners and laborers about Washington mines is higher than in many other states, but these men, while more intelligent than the foreigners are often much more reckless and take chances which they should avoid.

The death rate per thousand employed underground was 3.19 in 1905. This figure increased to 9.17 in 1910. In 1911, it fell to 4.99, which is lower than in any year since 1905.

High Death Rate Due to Pitch

On closer study, it is seen that mining conditions are more dangerous in Washington than in most of the states with lower death rates, but it is also apparent that there are more fatalities in the coal mines of Washington than there should be. The coal beds are nearly all quite steeply inclined and there are comparatively few miners who work on a "pitch" of less than 10 or 15 deg. to the horizontal, and the large majority work on pitches of from 20 to 90 degrees.

With the exception of a few sections, which cover special phases of mining, the state laws which govern the mines are entirely inadequate, and if it were not for the humanitarian view of the situation, taken by most operators, the death rate would be even larger than it is. At the same time the fatality rate is higher than in the Vancouver Island mines, yet the conditions, although somewhat in favor of the latter, are similar.

About one-third of the fatal and one-fourth of the nonfatal accidents, in the Washington mines for the past seven years, have been due to the steep inclination of the coal beds.

It is difficult, in fact almost impossible, to make laws which will prevent those accidents which are due to the steep inclination of the coal beds. Added to the common dangers of coal mining in flat workings are many of the dangers of metalliferous mining, consequently the number of accidents may be expected to be greater than in the coal mines of the central and eastern states, where these dangers do not exist.

Difficulties of Supervision

In Washington the number of assistant foremen, firebosses, shift bosses, etc., per hundred men employed underground is not high. Because of the steep inclination of the coal beds, one man cannot visit nearly so many working places in a given time as he can inspect in a mine where the beds are flat. The result is that working places are not visited with sufficient frequency by the mine officials.

This fact, coupled with the readiness of the average Washington coal miner to "take a chance" to save a little time or work, is responsible for a great many of the miscellaneous accidents. With the passing of the pick miner and the coming of the "coal blaster," the disposition to be reckless has developed to a surprising extent.

So far as we are able to suggest, the only effective method of reducing these miscellaneous accidents is to increase the number of mine officials and enforce a closer supervision of the workmen. Such a step would, of course, mean increased cost.

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During the past three and one-half years the United States Geological Survey has classified as coal land, 17,459,105 acres in the public land states, and this land has been restored to sale. The appraised value of this land, as fixed by the Survey as a result of geologic examinations, and promulgated by the General Land Office aggregates a total of $742,620,649. The minimum valuation for the same lands, at which they might have been purchased a few years ago before the policy of classification was adopted, is but $295,989,140.

*State coal mine inspector of Washington.
†Mining engineer, Bureau of Mines.

Our Export Trade During 1912

By F. R. Wadleigh*

SYNOPSIS—As a result of England's great coal strike during the year, American exporters had unusual opportunities for strengthening their position in the foreign markets. While the trade benefited in a substantial manner by this abnormal condition, the activity in our own markets developed to such proportions that the attention of those interested was diverted and the full possibilities of the situation were not obtained. Mr. Wadleigh and others are of the opinion that local exporters would do better by concentrating their efforts on the markets contiguous to the United States, rather than by attempting to establish control of the Mediterranean trade.

In reviewing our exports of coal during 1912, the coal shipped to Canada may be passed over with the bare mention of the fact that 80 per cent. of our total exports are to British America. That this is so, is not due to our superior product (although it is superior), or to our better salesmanship, but simply because of location, our coal fields being nearer to the more populous parts of Canada than are its own deposits, and the imports of United States coal have grown steadily and kept pace with the increasing population and more numerous industries.

Neither should the coal shipped to Panama, amounting to approximately 488,000 tons, be considered as export coal, as it is all shipped to the Canal Zone for use on the Panama R.R., owned by the United States, and in the work of digging the Canal it does not come into any competition with foreign coals, and therefore is not an export product any more than that shipped from Hampton Roads to New England. Coals shipped to Porto Rico and Alaska come in the same category; they are not export coals, but coals shipped to our own territory.

The elimination from our export tonnage of coals shipped to Canada, Alaska and Porto Rico, enables us to consider with truer perspective and better understanding the relation that our coal exports bears to those of the world, and especially to those of Great Britain, our greatest competitor in the world's coal markets.

Bright Outlook at the Beginning of the Year

The beginning of 1912 gave bright prospects of a large increase in the shipment of American coals to foreign countries, especially to those supplied from Great Britain. Ocean freights were only slightly above normal, and the certainty of a strike of the British miners, with both sides so far apart in their demands, that a prolonged dispute seemed probable, gave good promise to the local operators of a large foreign business, and an assurance of entrance into markets hitherto impossible or at best difficult of access. "If once we get a foothold in these markets," it was said, "the British coals can never drive us out."

In 1911 determined efforts were made by the United States shippers to increase their coal exports and three or four of the large selling companies had already, that year, sent men to England and Italy to establish offices for the purpose of selling trial cargoes and making contracts for additional ones. Considerable success attended these efforts; several cargoes were sold and a few contracts for specified tonnage running into 1912 were made, but on coal for this year's delivery, with one exception (when a freighting contract was made before closing any contract for coal) no allowance, or insufficient allowance, was made for any possible advance in ocean freights; then, too, the tidewater price of United States coals was at a low point. When the sudden, and to many, unexpected, rise in ocean freights came, followed by a gradual but steady advance in the price of the local coals, caused by increased home demands, strike prospects and a scarcity of labor, the export business did not look so promising, and the same old story was repeated, to some extent; that is, when the home demand becomes strong with a fair price, the foreign business fades into the distance and is not nearly so attractive.

The Strike in Great Britain

As the British miners' strike became imminent and assured, many inquiries were received on this side for coals to replace the British product. A number of foreign shippers and buyers sent their agents over here; our coal ports became congested, the tidewater prices went up to $4.50 per ton and the prospects for a large export trade became bright. Unfortunately for us, however, we were unable to increase our output (owing to labor troubles, and the scarcity and crippling of the railroads by severe storms and floods) sufficiently to take care of this increased export demand, before the British strike was at an end, and many foreign buyers, unable to get coal here, immediately went back to the British product, so that we really obtained little permanent business in foreign countries. About the same time, New England buyers began to call for heavy shipments on contracts so that foreign business was not followed up as it would have been otherwise.

The strike of the British miners was unexpectedly brief and caused comparatively little diminution in the stocks of British coals in foreign countries; about the time we began to feel the effects of the strike, the miners were back at work, and the British shippers were straining every nerve to make up for their lost tonnage, in order to oust the United States coals from what they considered their own markets. How well they succeeded in this is largely shown by the British export figures for the eleven months of 1912, which amounted to 61,070,000 as compared with 61,236,000 tons in 1911, or a decrease in the former year of only 166,000 tons, notwithstanding the strike. The British Channel ports, Cardiff, Swansea, Newport and Port Talbot, from which nearly 50 per cent. of their coal exports come, and are those with which the United States fuels compete, showed an actual increase of 40,200 tons in exports. Part of this recovery of tonnage was undoubtedly due to the increased demand and consumption, but the fact remains that they did recover most of the tonnage lost on account of the strike.

The unparalleled rise in ocean freights hit the United States shippers to foreign countries much harder than it did the British shippers, and made it difficult, with the rise in local prices, to hold the business they had gained

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and almost impossible to get any new business. For instance, in September, notwithstanding a difference of about a dollar per ton in the tidewater prices of good Welsh and the highest grade United States coals, the delivered prices in Rio Janeiro showed nearly two dollars' difference in favor of the Welsh coal.

Our Logical Markets

It is the opinion of many, of whom I am one, that the local exporters made the mistake of putting forth their strongest efforts, and in some cases their only effort, to get increased tonnage in the Mediterranean ports. Instead, they should have attempted to displace the foreign coals in South America, our natural market, where some other lines of trade are growing, not by steps, but by leaps and bounds. This market belongs to us by right, and we will have it, if we go about obtaining it in the right way.

It is true that the difficulty of getting return cargoes for steamships carrying coals to South American ports, make these markets seem difficult of entrance, but they *can* be taken possession of, and will do us more permanent good than all of the Mediterranean business. It is, however, a long distance to Buenos Aires or Valparaiso, and much easier to go to England and Italy and France, and hundreds of agents and representatives can be found in those countries quite willing to work for United States gold, to one in Brazil or the Argentine. In addition to this a knowledge of Spanish and of the people and their ways of going business is essential to the successful salesman, whether of coal or manufactured articles.

Progress Made

Yet notwithstanding the peculiar and unforeseen conditions that arose during the past year in the export coal business, our exports did show considerable increase, and certainly did alarm the British trade to the extent of showing a hitherto unknown interest in the quality of United States coals. This is shown by inquiries from buyers and editorials in two or three of the leading British trade papers, as well as in staff letters from correspondents. These latter generally consisted in running down the quality of the United States coals, and their preparation and appearance, but they at least felt obliged to take notice of them, something they had never done before. One of the two leading English coal papers had an editorial on "The Menace of American Coals," while the other, the *Colliery Guardian* had, some time previous, called the American coals nothing but "carbonaceous dust."

We did succeed in entering into markets that had never used our coals before, and had prices remained where they were at the beginning of the year, and ocean freights not gone up, our efforts would have shown most gratifying results. Now, at the close of the year, when cars are scarce and laborers not only few, but inefficient and unwilling to work, the export market is being lost sight of and shippers are hard put to fill their home contracts. In the early months of the year foreign business was taken at as low a figure as $2.40 per gross ton f.o.b. tidewater, while now the same grade of coal is selling at $3.25 to $3.50. Yet with all this increase there is a steady stream of United States coal going to foreign countries, more than at any other time under similar conditions; the tidewater price of the best Welsh coals has also increased from $3.84 per ton in January to $4.55 in December.

Necessity of Building Vessels

Before we can hope to compete for any considerable share of export business we must build our own ships to carry it in, as is now being done in the New England trade. We must also probably establish storage depots at the most important markets accessible to us, from which small or large quantities can be shipped as required. The course of ocean freights during 1912 has been unusual and has militated against our export business. Rates advanced steadily during the year to unheard of figures, and vessel tonnage was scarce at any price. These high rates continued until December when they began to show a decline.

It would seem that this scarcity of ships and consequent high rates was due to the unusual demand for tonnage owing to the increase of business all over the world, and not to any diminution in the number of ships. Just why the December drop in freights should have come so suddenly and have been so marked, it is hard to determine, and its duration is equally difficult to foresee. General business is just as good, if not better and the shipyards have an immense amount of work ahead, the effect of which may be felt later on, and which may result in a still further lowering of rates, although the ship owners say that these will go back to the previous high levels at the first of the year. It all puts the exporter in a quandary, and the wise man will be he who makes no c.i.f. contracts, unless compelled to do so, during the coming year.

Statistics

Full statistics of our export trade during 1912 are not yet available, but we give below complete figures from the principal Atlantic ports.

With the exception of the tonnage sent to Canada, not considered in this review, and small tonnages from the Gulf of Mexico ports, these figures give our true export trade.

	1912	1911
Philadelphia	825,234	791,506
Baltimore	628,712	479,096
Norfolk	1,475,485	1,071,130
Newport News	971,336	785,763
Total	3,900,767	3,127,495

These show an increase of 773,272 tons in 1912 over 1911, or 25 per cent., not a very brilliant showing for a year that began so well, and apparently held out such promising conditions for our export coal trade, but still a rather substantial gain.

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Pennsylvania Leads in Minerals

Pennsylvania far outranks all other states in the value of its mineral output. In 1911 this state contributed, exclusive of pig iron, 24.7 per cent. of the total mineral output of the United States. The reason for Pennsylvania's undisputed leadership lies primarily, according to the United States Geological Survey, in its great production of coal. It is almost exclusively the source of anthracite, and produces over one-third of the total bituminous output. Pennsylvania ranks second, next to New York, in the value of its manufactures, and stands first as a mineral producer in cement, coal, coke, pig iron, lime, mineral paints, sand and gravel, and building stone.

The Connellsville Coke Trade in 1912

SYNOPSIS—Production in the Connellsville region for 1912 crossed the 20 million-ton mark for the first time in its history. Favorable conditions prevailed throughout the year with the exception of a labor shortage which curtailed operations to a limited extent. The year closed with quotations higher than ever before. Shipments totaled 20,000,873 tons representing a value of $38,401,676.

The Connellsville coke region shipped 20,000,873 tons of coke in 1912, which, valued at the average market price of $1.92, represents a value of $38,401,676.

The Connellsville coke trade for 1912 would have been at least 10% better if there had been a man for every job. As it was, both production and output broke all records, even if they did win by a scratch. Twenty million tons was very closely approached in 1906, but never was it over-lapped until now. The value of the output was often exceeded. In 1903, for example, with an output of only 13,345,000 tons the value was over $40,000,000. In 1906 and 1907, the value of the annual output rose to $55,000,000. As recently as 1910, with an output of 18,689,000 tons, the value exceeded $39,000,000. Prices of spot coke were never higher than they are now, but the average of the year was less than $2. If the business continues at the same gait it is now going, 1913 will be by odds the biggest year in the Connellsville coke business.

Coke Ovens and Labor Supply

There has been no increase in the number of ovens in the region, though there have been some changes from beehive to rectangular types. The operators have not been able to work all the ovens they have and there has been small incentive to build more. There are now in the region 38,884 ovens as follows: Beehive, 35,399; rectangular, 3335; byproduct, 110. There were 738 additional ovens constructed during the year and 746 abandoned.

A number of mechanical coke drawers were installed during the year. The use of mining machines became more general. The installation of these machines was prompted quite as much by labor necessities as by the desire for economical operation.

The greatest handicap the Connellsville coke trade had during the year was its inadequate and uncertain labor conditions. This labor shortage was not realized until an attempt was made to fire up several thousand ovens in January, when it developed that there were not enough men to be had to operate them to their capacity.

The year 1911 closed with 26,406 ovens in blast. During January, 4000 ovens were lighted, running the active total up to 30,400. March closed with 32,000 active ovens. In the meantime, the Frick Company had announced an increase in the mining rate from $1.35 to $1.44 per hundred bushels and other labor in proportion, and the merchant operators followed suit. A few more ovens were lighted and the first week in May saw 32,663 ovens fired, but production rose only to a little over 400,000 tons weekly, as against a capacity running full of 442,000 tons. Failing to secure enough men to operate the ovens in blast the operators reversed their policy and proceeded to regulate their active ovens to labor conditions. Over 3000 ovens went out in the ensuing three months.

In August the tide turned again. Through earnest and systematic effort the labor supply was gradually improved and the year closed with 32,700 active ovens. To attract labor, the operators not only advanced wages, but many of them, notably the H. C. Frick Coke Co., made earnest efforts to further improve working conditions at their plants and to make the workmen's homes pleasant and attractive. These efforts met with so small a measure of success only because of other conditions which could not be controlled.

CONNELLSVILLE COKE STATISTICS FOR 1912.

	Production			Shipments	
Week Ending	Merchant	Furnace	Total	Cars	Tons
Jan. 6	137 650	170,256	307,906	9,095	307,894
Jan. 13	141,372	174,060	315,432	9,341	316,138
Jan. 20	147,058	248,127	395,185	11,271	379,220
Jan. 27	138,521	238,076	376,597	11,113	375,955
Feb. 3	147,923	212,230	360,153	10,623	359,016
Feb. 10	145,114	209,455	354,569	10,590	351,404
Feb. 7	146,420	247,244	393,664	11,862	394,116
Feb. 24	145,664	245,589	391,253	11,738	389,597
Mar. 2	148,421	247,589	396,010	11,890	393,787
Mar. 9	151,419	247,296	398,715	12,124	401,643
Mar. 16	155,779	252,458	408,237	11,985	398,204
Mar. 23	15',619	247,228	398,847	11,615	385,541
Mar. 30	157,900	255,241	413,141	12,450	412,112
Apr. 6	158,732	256,732	415,464	12,314	413,595
Apr. 13	132,913	230,376	363,289	11,033	359,568
Apr. 20	148,097	248,223	396,320	11,654	392,165
Apr. 27	150,285	251,209	401,494	11,882	398,868
May 5	152,375	249,169	401,544	11,929	400,908
May 11	164 295	237,665	401,960	11,991	400,799
May 18	159,663	239,293	398,956	11,942	398,344
May 25	156,452	237,864	394.316	11,793	393,806
June 1	161,088	218,033	379,121	11,361	379,316
June 8	159,745	238,911	398,656	11,767	400,882
June 15	154,206	237,586	391,792	11,837	393,877
June 22	144,655	229,074	373,729	11,364	377,257
June 29	162,692	230,948	393,640	12,096	400,588
July 6	136,486	192,675	329,161	9,777	327,678
July 13	154,863	220,694	375,557	11,246	377,236
July 20	137,614	217,494	355,108	10,639	356,215
July 27	118,069	197,654	315,723	9,377	312,875
Aug. 3	146,728	232,429	379,157	11,369	380,734
Aug. 10	150 796	235,171	385 967	11,451	387,871
Aug. 17	147,352	226.749	374,101	11,101	377,730
Aug. 24	145,107	224,011	369,118	10,967	373,454
Aug. 31	146,585	225,330	371,915	11,032	374,893
Sept. 7	142,277	215,562	357,839	10,611	361,045
Sept. 14	149,882	222,899	372,781	11,028	374,680
Sept. 21	151,781	221,850	373,631	11,005	374,305
Sept. 28	157,267	225,360	382,627	11,168	380,515
Oct. 5	166,188	232,013	398,201	11,651	396,382
Oct. 12	166,099	231,408	397,507	11,524	391,370
Oct. 19	166,719	232,730	399,449	11,710	397,778
Oct. 26	166,825	232,980	399,805	11,754	398,448
Nov. 2	165,286	231,967	397,253	11,623	394,895
Nov. 9	166,583	232,559	399,142	11,763	398,371
Nov. 16	167,309	233,309	400,618	11,797	399,753
Nov. 23	167,584	237,068	404,652	11,995	405,801
Nov. 30	166,302	233,809	400,111	11,864	401,330
Dec. 7	164,134	228,872	393,006	11,626	393,540
Dec. 14	162,705	226,359	389,064	11,552	389,191
Dec. 21	166,747	245,371	412,118	12,828	431 683
Dec. 28	145,568	213,437	359,005	10,635	358,572
Dec. 31	48,523	71,146	119,669	3,544	119,524
Total	7,991,437	12,040,838	20,032,275	595,336	20,000,873

The United States Steel Corporation hints that there is another wage advance at hand. If it extends to the Connellsville coke region it may stimulate immigration hither and improve labor conditions.

The wages now paid are as follows: Pick mining and loading room and rib coal, per 100 bushels, $1.44; pick mining and loading heading coal, per 100 bushels, $1.58; pick mining and loading wet heading coal, per 100 bushels, $1.70; drawing coke, per 100 bushels, charged, 82c.; drivers and rope riders (shafts and slopes) per full run, $2.85; drivers and rope riders (drifts), per full run, $2.80; cagers, per full run, $2.85; firebosses, per day, $3.50; tracklayers, blasters and timbermen (shafts and

Note—Abstract from the "Weekly Courier," Jan. 2, 1913.

slopes) per day, $2.85; tracklayers, blasters and timbermen (drifts), per day, $2.80; assistant tracklayers and inside laborers, per day, $2.15; dumpers and tipplemen, per full run, $2.15; levelers, per oven, 13¼c.; chargers per day, $2.15; forking cars, 40,000 pounds capacity and less, $1.75; forking cars, 50,000 pounds and 60,000 pounds capacity, $1.85; forking cars, over 60,000 pounds capacity, $2.00.

Crushed Coke and Byproduct Coal

The crushed coke business, at one time a prominent feature of the Connellsville coke trade, but recently confined almost exclusively to outside districts has taken a fresh start. In spite of the desperate demand for furnace coke during the last quarter of 1912, approximately 40,600 tons of crushed were shipped out of the Connellsville region during the year.

Crushed coke is a successful rival of anthracite as a domestic fuel where it can be laid down at competitive prices. It is prepared in similar sizes to anthracite, known to the trade as egg, stove, chestnut and pea, the sizes bearing close relation to the articles whence they get their names.

Not all Connellsville coal is made into coke in the Connellsville region. Approximately 2,000,000 tons annually are coked in the byproduct ovens of the United States Steel Corporation at Gary, Ind., Joliet, Ill., and Sharon, Penn. About one-half of this coal, or some 60 cars per day, is shipped to the Sharon ovens and the remainder goes to the western plants where it is mixed with Pocahontas coal. It was the purpose of the Steel Corporation to use a mixture of Pocahontas and Illinois coal in the Gary and Joliet ovens, and for this purpose a large area of coal was purchased in the latter field, but it was found in practise that better results, chemically, physically and commercially, were obtained by the Connellsville-Pocahontas coal combination. Connellsville coal is now being shipped from the Gates and Filbert mines which have no oven equipment, and from the coking plants at Dorothy, Bridgeport and Colonial No. 3.

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The Petroleum Industry in 1912

There was no considerable change in the quantity of petroleum produced in the United States in 1912 compared with 1911. Nevertheless, according to David T. Day, of the United States Geological Survey, the year was as full of remarkable incidents as is usual in the history of this article of commerce, which depends for its statistical position more upon the chances of new discoveries and less upon trade demands than any other commodity except gold.

As a rule, the Eastern fields declined in production, because it was impossible to keep up the great output of 1911 without large additional discoveries of new pools in the older fields. The Eastern decline was, however, offset by the increase in California, where the San Joaquin Valley fields (Midway, McKittrick, Maricopa, etc.) are still at the height of the gusher stage.

It will take much time to calculate the amount of oil sold at the different prices of the year, but it is evident that the total value of the product increased markedly being about $150,000,000, compared with $134,144,752 in 1911.

An estimate of the production in 1912 and a comparison with the product in 1911 is given below:

PRODUCTION OF PETROLEUM IN THE UNITED STATES IN 1911 AND ESTIMATED PRODUCTION FOR 1912

(Barrels of 42 gallons)

State	1911	1912
California	81,134,391	87,000,000
Oklahoma	56,069,637	52,000,000
Illinois	31,317,038	28,000,000
Louisiana	10,720,420	10,000,000
West Virginia	9,795,464	11,800,000
Texas	9,526,474	10,500,000
Ohio	8,817,112	8,500,000
Pennsylvania	8,248,158	8,000,000
Indiana	1,695,289	1,200,000
Kansas	1,278,819	1,300,000
New York	952,515	700,000
Kentucky	472,458	500,000
Colorado	226,926	200,000
Other States	194,690	500,000
	220,449,391	220,200,000

Stocks—In all the fields except those of California and the Gulf there was a steady drain on stocks during the year, so that from a total of 81,789,390 bbl.—over half a year's output—on Jan. 1, the stock declined to 69,000,000 bbl. at the end of the year. This drain reflects the increased capacity of the refining plants of the United States, the greatly increased exports, and a gradual change in the general condition of the industry by which gasoline has become much more in demand, so that the trade is well satisfied with heavier grades of gasoline or naphtha. For this reason the dividing line between naphtha and kerosene has necessarily been drawn nearer to kerosene and a large quantity of oil has been distilled into the gasoline portion of the products and a less output of kerosene resulted.

On the other hand, the heavy residues which are marketed as fuel oils have come into greater demand, and owing to the over-evident effort to increase the yield of light products by splitting up these residues the supply of fuel oil has not kept up with the demand. The advent of internal-combustion engines, such as those of the Diesel type, promises still higher prices for fuel oils. The United States has been slow in the adoption of these new engines, but their general adoption abroad has pointed the way to rapid increase in their use here.

Prices

The general decline in production except in California would doubtless have been much greater but for the effort to apply laws of supply and demand by increase in price. Prices advanced so greatly during the year as to stimulate drilling, even in the old New York and Pennsylvania pools, and so checked the decline. Formerly this plan has not been so successful. In the mid-continent field also it checked the decline, so that the product will come within 4,000,000 bbl. of the maximum output (in 1910). In the Appalachian field, where higher prices and cheap methods of pumping oil wells make the decline slow in any event, the great rise in price from $1.30 to $2 per bbl. seems to have checked the normal decline and even to have effected a slight increase, which was gratifying.

Another feature tending to strengthen the position of oil in this country is the decrease in production in Russia, from 66,183,691 bbl. in 1911 to about 60,000,000 bbl. in 1912. Roumania increased its product slightly, but not sufficiently to offset the Russian decline. The chief decrease was in the old Baku field. The world's consumption of oil, according to Mr. Day, is now about a million barrels a day, the United States furnishing more than all other countries.

The Coal Markets During 1912

By A. T. Shurick

SYNOPSIS—A detailed review of trade conditions for the year 1912. The situation was abnormal in many respects, due to the protracted suspension in both the anthracite and bituminous fields, pending the fixing of the new wage scales. Anticipation of this curtailment in production caused heavy speculative buying and a temporary panicky condition, which was succeeded in midsummer by a period of extreme dullness. The markets gathered strength, however, towards the last of the year and closed firm and active in all departments.

The year of 1911 closed with the coal trade in a rather stagnant position. Some activity was noticeable the early part of December as a result of the car shortage, but with the concluding of shipments in the lake trade, the situation in this respect underwent a decided change with the result that plenty of equipment was available, and the market flooded with coal. This was further aggravated by the mild weather which caused a light domestic consumption.

The trade slumped steadily, although easily, during the course of the month but firmed at a rather low level toward the latter part, at which it held its own into the new year. This mild hardening of the market was due primarily to the cessation of work in the mining region over the holiday period, and offered only a temporary relief. The end of the year witnessed a slight activity in steam business due to an improvement in work at the steel mills.

January

The new year then opened with the market at a low level but steady. More seasonable weather appeared during the early part of January, which brought with it an increased domestic demand and a general improvement all along the line. Towards the middle of the month there was an abrupt fall in temperature, accompanied by severe storms which created a shortage in the market and resulted in the demand becoming quite heavy; requisitions became so numerous that operators were compelled to refuse further orders.

This condition continued for some two weeks, the trade reaching the strongest position it had been in so far that season. The return of mild weather again towards the close of the month, however, caused a slight easing off and more normal conditions were restored.

Consumption, which was apparently below normal at the end of the year, showed an improvement the first part of the month and became quite heavy towards the middle, responding quickly to the change in weather conditions; the reserve supplies of the consumers were drawn upon at this time. The return of milder weather toward the latter part of the month brought with it an easing off in the domestic consumption and a resumption of a more normal market. By reference to the accompanying diagrams it will be noted that no unusual features occurred during this period, as regards quotations. Prices remained at an even and rather low level, considering the time of the year, throughout the month.

The inclement weather towards the middle of the month restricted the movement materially. The transportation troubles became moderately grave during this time so that arrivals at the large consuming centers were far below normal. The heavy weather caused some losses at sea and made the coastwise movement slow and uncertain but the more equitable conditions towards the last of the month, effected a rapid change in the transportation situation and the tonnage movement became quite heavy. This increase is reflected in the rapid decrease in the surplus of idle coal cars, at this time, as shown on the accompanying diagram.

February

Contrary to expectation the return of mild weather the first part of the month did not result in any easing off in the sharp demand that appeared during the latter part of January. The large tonnages, accumulated on side tracks during the cold snap, were moved in and readily absorbed without any apparent effect. The situation, as regards anthracite particularly, became quite hard at this time, and none could be bought in the spot market. It was reported at some points that a number of steam plants were compelled to close down through the lack of sufficient fuel.

As the month advanced the demand gradually became more urgent, until the climax was reached shortly after the middle of the month, when the situation was verging on the acute. This was ascribed partially to the anxiety of the consumers over the possibility of a long shutdown in the mining regions April 1, but was more probably due to the low temperatures then prevailing.

Consumption for the month was quite heavy, and it was claimed by some that new records were established in this respect. Heavy shipments were made, but it appeared impossible for the production to keep up with the demand, and the supplies in the hands of both dealers and consumers were steadily depleted. This continued well up past the middle of the month, when a break in the weather occurred which brought with it much needed relief to the consumer. This did not, however, tend to soften the market, as supplies were uniformly low throughout the country and the demand urgent.

Prices continued fairly uniform on a somewhat higher level than during the previous month, as will be noted on the accompanying diagram. The close of the month however, marked the beginning of the sharp advance that prefaced the suspension in mining Apr. 1. At the beginning of the month quotations were ruling hard and firm, and continued to gain strength throughout the period. Toward the middle, a strong demand appeared for soft coals for storage uprposes, and these commanded good figures, finally reaching the point where they could be obtained only at fancy prices. The period closed with operators entirely in control of quotations, and with every indication of continuing so.

Coal shipments for the month were quite heavy. The large tonnages, which the severe weather in January had made it impossible for the roads to move, were now shipped in.

The car supply for the month was only fair. As will

be noted on the accompanying diagram, the surplus of idle coal cars fell sharply below that for January, but maintained the new low level throughout the month. Production during this period was undoubtedly being increased in anticipation of the expected suspension of mining Apr. 1. However, this was too remote at this time to effect any radical change, although it will be seen, by reference to the accompanying diagram of the monthly shipments of anthracite, that all the companies show a uniform, though slight, increase for the month.

March

With the prospective strike of both the anthracite and bituminous miners now only a month off, the demand became firmly established and quite insistent. It was becoming evident that there was a shortness in supplies of all kinds and in practically all parts of the country. Thus, instead of going into a protracted suspension of mining with large surplus stocks, as customary heretofore, the industry found itself with supplies low, and, in many cases, below all previous records. This was of particular significance in view of the fact that both the bituminous and anthracite agreements expired simultaneously.

It was inevitable under these conditions, that prices should experience an almost perpendicular advance which was the case, as will be noted on the accompanying diagrams. While this sharp increase in quotations tended to make the consumers cautious about purchases, the demand nevertheless continued quite strong all along the line. The activity in the market gradually increased and towards the middle of the month began to assume panicky proportions; severe weather appeared and the fear of a possible long shut-down at the mines had taken a firm hold on the consumers. There were many inquiries for April tonnages but operators refused to quote beyond Apr. 15. The situation was further aggravated by the large Trans-Atlantic steamers coaling at this end for the round trip, because of the strike in Great Britain.

Toward the last of the month the sensational advance in prices culminated at the high level of the year, as will be noted on the accompanying price diagrams. The demand became urgent in the extreme, and the general tone of the market throughout the country was uniformly panicky. The deliberations of the miners and operators had been entirely barren of any results, and it was now evident that the industry must go through a suspension of short duration at least. The market conditions were undeniably critical at this time.

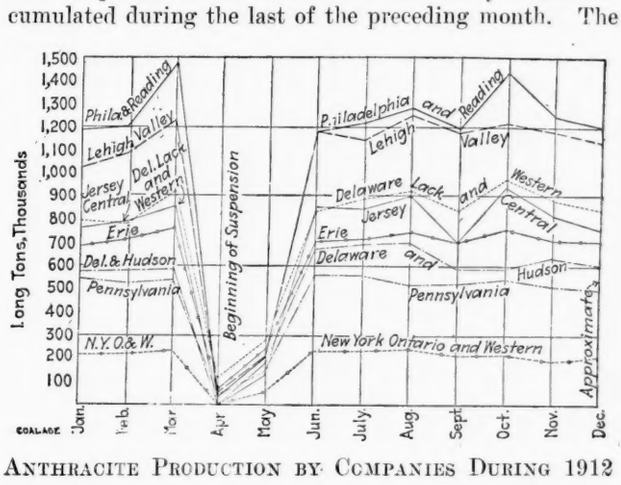
The car shortage began to ease off toward the latter part of the month, there again being a surplus on March 27. This enabled the mines to materially increase their production, and the close of the month witnessed the heaviest shipments in the history of the trade. This was particularly noticeable in anthracite. As will be seen by reference to the accompanying diagram of hard-coal shipments by the different companies for the year, these show a uniformly sharp advance for the month of March, and numerous new high records were established.

The month closed with the market in a decidedly tense condition with consumers and producers both keenly watching the results of the wage conferences, and many of the larger interests having special representatives at the meetings to assure prompt and reliable information on the situation. It was purely a strike market and interested parties on both sides were playing a waiting game.

April

The month of April opened with a general suspension in effect in practically all the organized coal fields of the country. Probably over 60 per cent. of the production was abruptly cut off. A feeling of hesitancy appeared to characterize the trade for the first few days, but reports to the effect that an agreement was being reached caused a softening in the market. As these were only tentative, however, and could not become operative in any event for some time, a heavy slump was prevented.

Prices therefore continued at the abnormally high level for from one to three weeks and it was the hope of the trade that the suspension would be of sufficient duration to permit them to work off the heavy stocks accumulated during the last of the preceding month. The



Anthracite Production by Companies During 1912

anthracite production, ordinarily quite heavy at this period of the year, was, of course, practically eliminated. Probably the most striking evidence of the effects of the suspension is shown by the rapid increase in the surplus of idle cars, which advanced from 4381 on March 27 to 46,578 on Apr. 11.

The middle of the month found the panic prices being liberally discounted in all parts of the country. Consumers showed every confidence in the belief that the referendum vote of the miners, upon which the bituminous situation hinged at this time, would be favorable, and, as a result, there was a heavy selling movement of speculative coal.

Later in the month, when it became evident that an agreement between the bituminous miners and operators had been effected, the trade was brought to an abrupt standstill. Consumers had prepared for a protracted shutdown, and the unexpected short duration of the suspension eliminated any disposition on their part to buy. A large number of dealers who had also stocked quite extensively, for speculative purposes, were compelled to throw heavy tonnages on the market, which tended to still further depress the trade. Much of this coal had been bought at high figures and wholesalers made every effort to maintain the high prices, but without much success.

The close of the month found the bituminous trade in the final stages of readjustment and approximately, on

a normal basis again. The mines were at work, though under curtailed production, which was, however, sufficient to meet requirements as most large consumers had stocked sufficiently to carry them over a 30-days' suspension and were not yet in the market. For the two weeks ended Apr. 25, the surplus of idle coal cars showed the greatest increase for the year, the total on that date being 92,548. Operators were slow in getting started at the mines and the month closed with the bituminous production far below the full rated capacity. Uncertainty in the anthracite situation still prevailed, but the harmonious sittings of the wage scale committees led to the belief that an agreement would be effected at an early date.

May

The heavy stocks, accumulated in anticipation of a prolonged suspension at the bituminous mines, had a decidedly depressing effect on the trade early in May. While some companies were still delivering on contracts, made at the high level in March, it was difficult to obtain anything more than normal prices at this time. Quotations were slowly but steadily easing off, and buyers were hesitating to purchase until they were assured that the bottom had been reached. Production was also at a low level, operators refusing to open up full blast until there was more pressure for coal. In the Middle West there was a total absence of any buying movement, and it was becoming evident that quotations must soon fall off to about the cost of production.

Later, the unprecedented action of the miners in rejecting the scale fixed by the joint committee caused some alarm and a further tightening of the situation in hard coal. This deadlock also helped the bituminous operators and, together with the opening of the lake trade, tended to check a further decline in this branch, which was now about holding its own. The situation was weak, however, and much difficulty was experienced in placing arrivals, which were again about normal.

The middle of the month saw a further relapse, due to the more general resumption of mining and consequent increase in production. Surplus stocks were still in evidence and the market was hardly in a position to absorb even normal tonnages; forced sales of demurrage coal were reported at some of the large distributing centers, and quotations again fell off. In anthracite, the situation had now become exceedingly tight and supplies quite short. Heavy premiums were being offered on every hand, and the market was in prime condition for a panic.

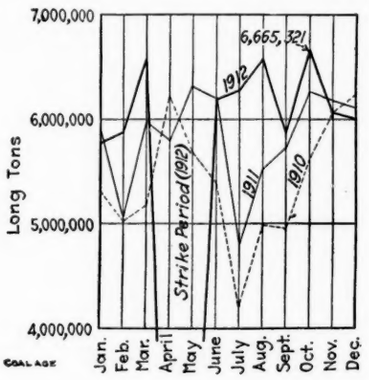
The end of the anthracite strike, toward the close of the month, was viewed with general satisfaction in trade circles. While this was accompanied by a slump in prices and a return to the usual summer lethargy, all uncertainty was, on the other hand, removed and the trade again established on a normal basis. Dealers immediately began storing up to their full capacity, in anticipation of the large shortage which must necessarily result from the long suspension in mining.

Toward the last of the month the new hard-coal circulars were announced, showing increases ranging from 15 to 50c. per ton. These advances were met with a strong protest on the part of the general public, and the demand eased up, consumers believing that little was to be gained by storing at the new quotations.

The bituminous outlook, toward the close of the month, was not encouraging. Production had been quite heavy, and with all hopes of profiting by the suspension at the anthracite mines now dispelled, it was obvious that prices could be maintained only by the most rigid curtailment. No attempts were yet being made to force the market by price cutting, but the outlook was disappointing.

June

The month of June opened up with the anthracite companies pressing their operating departments to the limit, in the endeavor to make up the shortage. The demand was not strong, however, consumers hesitating to buy at the new high prices. In bituminous, the only encouraging feature was the reports of a labor shortage in different parts of the country which, it was hoped, would effect a curtailment in production. With anthracite shipments again back to normal, the soft coals were obliged to stand on their merits and, while quotations were nominally being held, there were well defined rumors of cutting, and orders generally were scarce.



Anthracite Shipments

Opposition to the increase in prices made by the anthracite companies became stronger as the month advanced. Domestic consumers were unable to understand why the whole of the advance in the miner's wages should be added to the domestic grades, and the feeling became quite bitter at a number of points.

During the two weeks ended June 6 the surplus of idle coal cars fell sharply from 68,419 to 35,140, being the greatest decline for the year, so it is obvious that there was a large increase in production at this time.

The bituminous market was dull and quiet at the middle of the month, but not materially different from the average at that period of the year. There was no buying except at sacrifice prices, and consumers were not displaying much interest in these. The lake shipments continued to be the best feature of the market, and there was also some increase in the steel industry. On the whole the trade was not abnormally low considering the time of the year, and exhibited a rather healthy tone. Production continued to increase steadily throughout the month, as is shown by the steady decrease in the surplus of idle coal cars over this period.

Toward the close of the month, the first complaints about the small shipments of anthracite, began to appear in the East. It was becoming apparent that the Western

agencies were being favored by larger deliveries in order to get them stocked up while transportation conditions were favorable. As a result, arrivals at the Eastern distributing centers were below normal. Wholesalers were attempting to accumulate their winter stocks at the summer price level and became anxious over the situation with the result that the hard-coal trade began to assume an appearance of activity.

In bituminous, conditions were directly the reverse. The uncertainty in the political situation began to be felt with the result that the manufacting demand was showing a decided tendency to ease off all over the country. Domestic business was also slowly declining to the usual low ebb at this period of the year; consumers generally were hesitating to contract, and the trade was absolutely devoid of interest

JULY

A car and labor shortage developed the early part of the month which had a decidedly stimulating effect upon the trade. The former was ascribed to the remarkable activity in steel, a great deal of the coal equipment being diverted for use in this way. While the surplus of idle coal cars showed a decided reduction for the two weeks ending with July 4, it was not, however, at a low point by any means, so production was still low. The labor shortage was becoming an important consideration, and it was obvious that, if mines were working up to anything like full capacity, it would be impossible to obtain an adequate supply.

Prices took another general slump all over the country, those at Boston touching the low point for the year, as will be noted on the accompanying diagram. Cargoes were arriving at Eastern coastwise points on consignment and embargoes were being declared at some places. It was evident that prices could be maintained only by a rigid curtailment in production on the part of the operators.

The middle of the month found many of the Eastern anthracite dealers entirely out of supplies and the pressure became strong for shipments out of New York and Philadelphia. The relatively light production for June, which was announced at about this time, produced a noticeable feeling of uneasiness in trade circles. This was further increased by the urgent demand from the line and Western trade, the latter being still quite insistent upon having the first shipments.

There was an appearance of a better feeling among the Eastern bituminous dealers at this time. Although the existing conditions did not justify this, still consumers generally, had been out of the market since the suspension and it was becoming apparent that many had about reached the end of their supply, and were being forced into the market. There was also a steadily increasing consumption, along with the rapid advance in steel. In spite of this optimistic feeling, orders were more scarce than at any time during the season, and the market was so flat and dull that there was scarcely anything to report.

The position of the market was quite unique. Bituminous, normally dull at this period of the year, was down to even a lower point than usual, while the shortage of anthracite was regarded as quite serious. Dealers in the latter grade were rapidly getting farther behind on orders, and it was becoming difficult to see how they would be able to handle the heavy fall and winter business.

The month closed with low prices being quoted uniformly all over the country, although there was an effort underway in the Eastern bituminous market to maintain a higher level. Operators were, however, becoming more optimistic, shipments were more nearly down to requirements, while free consignments were seldom heard of and there were not the indiscriminate pounding of prices, so common during the preceding few weeks.

AUGUST

The first of August brought with it some tangible evidence of the improvement in bituminous, which the dealers had been looking forward to. This was general all over the country, with the possible exception of the Pittsburg district where prices broke to the low level for the year.

Deliveries generally were now only made on specific orders, and indications were that the low prices of June and July would not again be duplicated during the rest of the season. There were no longer any heavy accumulations, coal was being more closely held, and there was an entire absence of demurrage; the demand was more insistent than at any time since the suspension, and the business was on a fairly profitable basis. This was, no doubt, affected by the policy of rigid curtailment adopted by a number of the larger producers, together with a further tightening in the car supply, the surplus of idle coal equipment again showing a reduction for the two weeks ending Aug. 1.

Apparently, the only problem before the hard-coal producers at this time, was the provision of an equable distribution of their production in such a manner as to cause the least complaint. Eastern dealers were being obviously discriminated against in this respect; this was, however, to be expected, as the more remote Western points must be supplied while shipping conditions were favorable.

By the middle of the month, the bituminous market was on a strong basis, with every indication of holding its own for the remainder of the season. It was becoming apparent that the supplies in the hands of the consumers were low, as was anticipated, and while there was no heavy demand, the market was probably in a better position than normally at this period of the year.

The sales departments of the hard coalers were pushing the operating end to the limit, and it was apparent that the August production of anthracite would be heavy. President White, of the miners' union, made a visit to the anthracite field during the month, which interfered with work at the mines and caused some dissatisfaction among the producers. This was unfortunate at this time, as the shortage was becoming more serious, with stove coal almost entirely out of the market.

Bituminous operators began to foresee an active business the coming fall, and the market gradually assumed a strong, healthy tone. The possibilities of transportation troubles during the coming fall, began to be anticipated by some consumers who started accumulating surpluses: This had a further stimulating effect upon the situation.

Mining generally was becoming restricted. In the Pittsburg district the car supply was poor, with occasional

embargoes being declared on shipments from some districts, and there was an insufficiency of labor, together with frequent small strikes at the mines. The car shortage in Ohio was so pronounced that mines were being subjected to an occasional shut-down. For the two weeks ending Aug. 29, there ceased to be any surplus of idle coal equipment and a shortage of 1715 was reported for the second time during the year; this shortage was not again eliminated during the remainder of the year.

The month closed with the demand for anthracite still far in excess of the supply, and with the production being as readily absorbed as ever. Dealers were beginning to receive inquiries from the consumers, and it was evident that the winter trade would open up in earnest soon. The soft coal market closed active and firm, with prices unchanged but being much more rigidly held. Consumers were seeking to cover their requirements against a possible car shortage and the rumors of the slow movement were making them anxious.

September

The early part of September found bituminous operators becoming cautious about future commitments, and old prices being gradually withdrawn. The labor troubles in the Paint Creek field had proved another disturbing factor in the situation, deliveries were slower and consumers less inclined to be particular about quality. Production in the Pittsburgh district was now practically equal to any previous record, and would have been still heavier were it not for the insufficiency of labor and inadequate supply of equipment for loading. Manufacturing demand was increasing and shipments to the lake becoming quite large.

Inquiries for October and November deliveries of anthracite at this time, were being met with the reply that no forecast could be made as to the situation then. While every effort was being made to meet the constantly increasing demand, the Eastern dealers were becoming more concerned over the situation, and premiums were steadily advancing. By the middle of the month coastwise dealers were down to a hand-to-mouth business, and the companies were taking the stand that they could look after none but old customers.

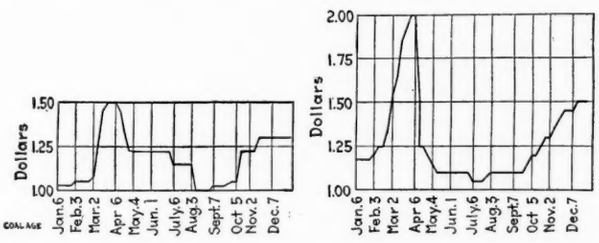
Bituminous production had become quite heavy by the middle of the month, but no surpluses were reported at the large distributing centers. Considerable of the West Virginia coals were being diverted into the Western markets which caused a shortage in the East, and arrivals were only about sufficient to meet contract obligations. Current shipments were going into immediate consumption, and no supplies were being accumulated. Prices in the Pittsburgh district were stiffer, without having experienced any advance, with the exception of domestic which had gone on to the usual winter schedule. Eastern dealers generally, claimed they had more business than they could handle, shipments were up to the maximum rate for the period, and the season showed every indication of being a prosperous one.

As the month advanced coastwise bituminous prices became more firm and there was more or less detention at all the piers. The West continued absorbing an unusually large percentage of West Virginia products, and shippers were going slow on new business. Production appeared to be only about equal to contract requirements.

Operators and jobbers in Ohio had all the business they could handle, and the inadequate car service was still curtailing production. There had been a continued heavy demand, with a limited supply, at Hampton Roads, and this finally resulted in an advance in the schedule at about this time. There was considerable business offered at good figures, which the operators were unable to take advantage of, and there was no evading the fact that there was a perceptible shortage.

The fall demand for anthracite began to open up toward the end of the month. Premiums asked in the retail trade were reaching a prohibitive level, and dealers generally were finding it easier to sell than purchase fuel. It was reported that a number of towns were practically bare of supply, and, while the clear weather caused an improvement in the coastwise movement, the scarcity at the terminals was making the loading slow.

At the close of the month it was becoming apparent that the anthracite coastwise dealers were unable to make any impression on their orders, and the trade was getting in a serious condition. The movement was being interfered with by the inadequate car supply, the demand still increasing faster than the shipments, and some consumers were being forced to substitute bituminous and coke for hard coal.



MINIMUM MINE-RUN PRICES AT PITTSBURGH, PENN.

BOSTON PRICES FOR CLEARFIELDS, F.O.B MINE

CHARACTERISTIC PRICE CURVES FOR THE YEAR 1912

The close of the month, also, saw the beginning of the abrupt advance in bituminous quotations, as will be noted on the accompanying diagrams. The shortage of coal equipment had been growing steadily, although not rapidly worse through the month, which ended with the bituminous market undeniably on a firm basis in all departments.

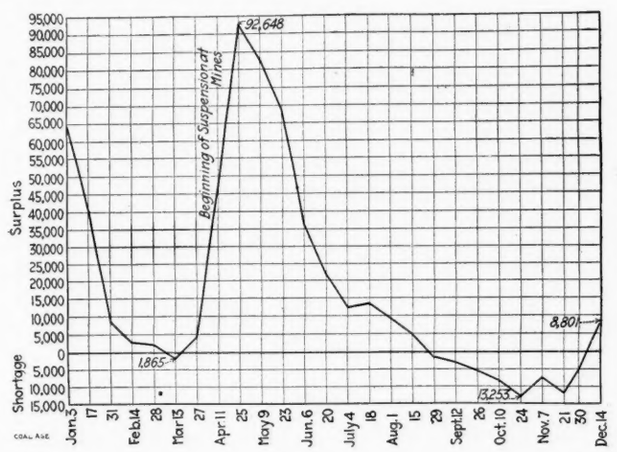
October

October opened with the bituminous market in a decidedly feverish condition. Buyers were appearing in the mining regions in the hopes of being able to pick up some loose tonnages, and the demand was urgent in all departments. The car shortage in the East has become so pronounced that operators could make no promises ahead about deliveries, and there was detention with practically all shippers. Companies were being pushed to take care of their contracts, and some began issuing instructions to their salesmen to accept no more orders. Most of the West Virginia product was still going into the Western market, and there was every indication that it would continue doing so until Eastern consumers bid up prices.

The appearance of higher temperatures toward the

middle of the month gave the anthracite dealers all over the country a welcome respite. Anticipation of the results at the closing of the heavy Western and lake trade began to be looked forward to, even at this early date. The opinion was freely advanced that the demand was abnormal by reason of many orders being placed in duplicate, and that with the appearance of these extra tonnages in the Eastern market, there was a probability of the trade experiencing a sharp recession. It was generally conceded that the operating companies were dealing with a hard situation and handling it to the best possible advantage.

The heavy demand for anthracite now began to swing onto bituminous, with the result that this branch became practically as hard as the former. There was a heavy movement of all kinds of freight, making the congestion worse and seriously affecting coal shipments particularly to tide. There were no free tonnages of the better grades to be had, tonnage consignments of all kinds were being detained, prices were correspondingly firmer, and consumers more concerned.



Surpluses and Shortages of Coal Cars During 1912

Ohio operators were now entirely at the mercy of the railroads, production was only about 40 to 50 per cent. normal, and the new circular of Oct. 1 was being maintained in every particular; manufacturers were seeking surplus tonnages and dealers were attempting to cover their requirements, but without much success. Demand and prices were improving in the South, and slightly larger tonnages going into the Northwest. Quotations continued ruling firm past the middle of the month, with requisitions insistent and the trade strong in every particular.

In spite of the assurances of the anthracite producers, it was generally believed toward the close of the month that the first appearance of severe weather would precipitate a runaway market; there was, however, some indication of an easing off in this branch, due to the mild weather. Eastern receipts of hard coal continued small, and apparently below those for the preceding few weeks and the end of the month found the dealers becoming imperative in their demand for fuel.

Toward the close of the month the scarcity of bituminous became so acute that consumers began purchasing outside of their contracts. Eastern arrivals were still curtailed due to the heavy movement West. Quality became a secondary consideration, the poorer grades took an almost spectacular advance, while operators became more cautious about future commitments. For the week ending Oct. 24 the shortage of idle cars touched the low point for the year, and it was obvious that production was heavy at this time.

Pittsburgh operators were now confining their entire attention to filling contracts and were reserved about accepting future business. There were no free tonnages of any description, and shipments were down to about 50 per cent. of normal capacity. Contracts were being freely made for the year or six months after Dec. 1 at the regular season circular adopted early in the spring, but which was so flagrantly cut in midsummer. By the close of the month sufficient tonnages had been closed to justify an advance in the circular for the year, and it was believed that this new high level would shortly be the minimum.

Eastern bituminous operators, who had contracted so freely in the spring, were, at the end of the month, becoming apprehensive over November and December deliveries. There was a dearth of steam coal in all markets, production reports for the mining regions were discouraging, while operators were evincing every confidence over the future.

November

The month opened with the anthracite operators responding to the heavy demand being made upon them to the best of their ability, but still showing little or no indication of getting ahead. The steam grades were the only easy branch of the trade and the domestic sizes were still going into immediate consumption as fast as received. Originating companies were withdrawing their Eastern fleets because of the dearth of domestic grades for shipment, hindrances and delays in both production and transportation were now the rule, and it was evident that the hard coalers would find it impossible to overcome the tremendous shortage. While the duplication of orders by the consumers had doubtless created an artificial demand, there was no doubt but that the trade was facing a strenuous situation.

The bituminous producers at the first of the month were finding it difficult to meet their contract obligations and there was no free coal in the market with the possible exception of a few odd tonnages of the lower grades. A strong off-shore demand developed which further complicated matters at the piers; detention of from one to two weeks became the rule and the situation was further aggravated by the anthracite roads withdrawing bituminous equipment for use in the hard coal regions. A number of embargoes were declared and the shortage in the Pittsburgh district reached the most serious proportions of the year. Contracts were being made at the full season circular, and mostly for the year, though occasionally for six months.

The announcement of the record-breaking production of anthracite for October was made at about this time but did not give any tangible evidence of relief. The situation was undoubtedly grave and the coast dealers who ordinarily had their full supplies by the close of navigation, Dec. 1, were beginning, towards the end of the month, to make extensive preparations for obtaining shipments throughout the season. The expected winter

demand began to get definitely under way, and, while large tonnages were being distributed, they were not sufficient to permit of the accumulation of any surpluses.

The coastwise bituminous market began to fluctuate so spasmodically toward the close of the month that it is probable there was considerable buying on speculation at that time. There was a freer movement to tide and some spot business developed, but supplies were so short that a number of companies were offering their fleets for rechartering. The Pittsburgh market was also fluctuating considerable, due to the uncertainty as to what conditions would be after the closing of navigation on the Lakes.

The car situation again tightened up toward the close of the month, there being a shortage on Nov. 21 of 12,005, this being the second greatest shortage for the year. The effects of this were quite noticeable in Ohio where the situation was probably the most acute at any time during the season. West Virginia operators were being pushed by their Western connections for final shipments before navigation closed and at the same time, the demand at the piers was so heavy that detention of from three to four weeks was quite common. The number of vessels awaiting cargoes fell off at the close of the month and more favorable weather conditions tended to lessen the anxiety of domestic consumers generally in the South, but the same uneasiness prevailed among the steam users.

The close of the month found the anthracite dealers with supplies probably shorter than they would admit to anyone except the producers. The comparatively mild weather had prevented any extensive runs on the producers and relieved what might have otherwise been a serious situation at this time. The results of the closing of lake navigation were now being eagerly anticipated.

December

The last month of the year opened with an appearance of a break in the anthracite market, the first for many months. This was due to a combination of heavier shipments into the Eastern markets and mild weather. While the situation could not be termed easy, particularly in the more remote localities, there was nevertheless a sharp decline in quotations at several points; indications were at this time that the hard-coal markets would shortly assume average normal winter proportions. Premium prices were further reduced as the months advanced and shipments continued heavy although all arrivals were going into immediate consumption. The unusually mild weather had been a great help to anthracite distributors up to this time.

Stocks of bituminous in the East were becoming shorter at the first of the month and the trade was on a firm basis, but there was an absence of pressure for coal and quotations remained conservative. Shipments to the lakes had entirely ceased shortly after the first of the month, and it was hoped that there would be an improvement in the car supply. A large proportion of the business in the Pittsburgh district for 1913 was put under contract during the first week at the prevailing circular and some large coke contracts were also let. Larger tonnages were being moved in Ohio and the situation in regard to supplies was somewhat easier. No quotations were obtainable on smookless at Hampton Roads, the high volatiles were bringing record prices, and the movement on contracts continued heavy. Toward the middle of the month the shippers were troubled a great deal by the railroads confiscating coal *en route*. Shipments were confined almost entirely to contracts and consumers were pressing the operators for their maximum allotment of tonnages.

By the middle of the month the expected improvement in the car situation, due to the suspension of shipments to the lakes, had failed as yet to materialize; some operators reported a fair supply, but others stated that conditions were less favorable than formerly.

In the coastwise anthracite trade, reports were general, by the middle of the month, of dealers being down to the bottom of their stocks and the situation was being furthur aggravated by thick weather which was interfering with the water movement. Consumers were, however, becoming more reluctant to pay the high premiums, believing, apparently, that the diversion of the Western tonnages into the Eastern markets must shortly effect a material relief to the latter. The markets were undoubtedly much easier, but it was doubtful if they would continue so when the real winter weather appeared.

Toward the close of the month the hopes of the coastwise dealers to obtain better supplies were dispelled by a succession of storms; vessels were overdue and many barges were waiting power to move them. Premium prices, however, were now definitely established at a considerably lower level, particularly at points more contiguous to the mining regions.

The middle of the month found the soft-coal dealers beginning to anticipate the customary suspension in mining over the end of the year, at which time a slight activity was expected, and quotations for the new year were being discussed. Prices in the Pittsburgh district were down to only a slight advance over the circular but were being rigidly maintained; operators were receiving a fair allotment of cars, probably sufficient for average needs. The steam trade in Ohio gradually became more active towards the end of the year and production was quite heavy, operators getting up between 75 and 90 per cent. capacity. At the close, the car supply was fair and there were indications that a shortage was developing; it was obvious that a spell of cold weather would undoubtedly precipitate an active market. Hampton Road shippers were gradually catching up on orders, but there were still a number of vessels awaiting tonnages at the piers. The December loading greatly exceeded that for November and it was clearly evident that this point was rapidly gaining in favor for bunkering and export tonnages among these consumers.

The year closed with those bituminous operators who were not under contract getting handsome profits while a still greater advance was expected with the appearance of more winter. The demand however, was spotty and confined mostly to smaller tonnages, although all arrivals found a ready sale at relatively good prices. Supplies were undoubtedly restricted and anticipation of the loss in production due to the holidays caused consumers generally to increase their committments.

It was evident at the end of the year that the anthracite situation was swinging around to more normal conditions. There was a slight improvement in receipts and the demand at the close was strong, but with premiums being freely discounted.

Coastwise Trade Conditions in 1912

By G. G. Wolkins*

SYNOPSIS—The year was one of much anxiety and uncertainty. Many wholly independent circumstances combined to relieve situations which otherwise might have been disconcerting, if not disastrous, to the trade. The prices on Pennsylvania grades were high at the beginning and end of the year, but low during the summer. They averaged better however than in the previous twelve months. Water freights moved up and down with the demand for coal, and were on the whole unsatisfactory. The anthracite situation in New England was far from what might be desired, and the tendency toward extreme prices is something difficult for the populace to understand or the dealer to explain.

To some extent, 1912 justified expectations; it was marked by uneven prices and a surfeit of anxiety over discouraging possibilities. The early adjustment of labor troubles, in the bituminous region a day or two in advance of the expiration of old agreements, and in the anthracite field after a few weeks' suspension, deprived the year of a place with 1902, and yet it was a record twelve months for bituminous tonnage and lent zest and variety to an industry accustomed to turmoil and strife.

The collapse in both the American and the British strike situations came just in time to allow consumers to replace at low prices the reserve stocks of bituminous that had been wiped out by seven weeks of exceptional cold, and in anthracite there has been a joining of weather, of traffic, and trade accommodation that has just about enabled the average retail dealer to get along on a hand-to-mouth basis.

In January and February, for weeks at a time, rivers and inlets ordinarily open to navigation were frozen over and some loss and much inconvenience ensued. In April a high freight market and a sharp "flurry" in steam coals gave way almost at once to a state of extreme dullness. Buyers who had practically stampeded for supplies "to last until May" now found their storage filled for months to come and there was generally an utter lack of interest in bituminous from any quarter.

Shippers soon grew cautious over commitments, even the spring contract prices were gradually withdrawn, and by mid-August it was plain there need be no worry about returns for the rest of 1912. The pressure was rather toward obtaining coal than being relieved of it. A labor shortage became increasingly evident during the fall months, the Western demand went from active to brisk, and by late September the loading of all the favored coals had begun to be subject to two or three weeks' notice and in some cases indefinite delay.

Buyers have been obliged to buy outside of contracts, and those Pennsylvania operators, in the Clearfield region particularly, who from one reason or another are free of obligations at least for a part of their output, began in October to reap a harvest in fancy prices.

The lines grew tighter until the end of December, when $2@2.15 at the mine was found an easy sale, with very little question as to quality. So the year ended as it began; with a pronounced shortage of the coals on which this market usually relies, and a prospect of panic prices, "if the weather turns cold."

Pocahontas and New River

The bituminous market in New England hinges largely on the output of the Pocahontas and New River fields, and the question of whether they are in long or short supply is always a determining factor. With the exception of the dull months from April to July, three grades were in strong demand and the average price return was much higher than for 1910.

January opened with slow loading at all three of the Hampton Roads terminals and prices were firm at $2.70 for what small amounts could be had outside of contract. Early in March a season price of $3.80 on cars, Boston, was made by one of the agencies as against $3.30 the year before, although part of the increase was due to an active freight market.

The Eastern dealer or manufacturer whose old contract was expiring was obliged, in effect, to bid against the offshore trade in order to get fuel for April, May and June. The flurry then at its height soon subsided, however, and the middle of April saw the usual short-lived celerity in closing season business on price bases anywhere from $2.50@2.70. The buying power was only moderate at this time and purchases were extremely conservative.

Loading conditions improved very fast during April, but there was lack of orders and late in May recourse was had to the usual and time-worn expedients.

It was difficult, after such months as January to April,

RECEIPTS OF BITUMINOUS COAL BY SEA AT BOSTON, SHOWING PORT OF SHIPMENT*

	Baltimore[1]		Norfolk[2]		Newport News		Philadelphia		New York		Totals		Foreign[3]	
	1911	1912	1911	1912	1911	1912	1911	1912	1911	1912	1911	1912	1911	1912
January	155,962	100,198	58,323	122,696	87,463	77,108	13,927	9,148	...	....	315,675	309,150	26,220	21,450
February	128,546	124,610	80,846	144,579	78,397	71,958	19,360	6,986	1,433	....	308,582	348,133	19,670	39,820
March	133,989	125,943	73,399	163,033	71,899	58,555	43,862	12,201	....	....	323,149	359,732	18,990	29,449
April	141,130	125,585	87,121	116,909	85,794	89,787	44,783	20,520	.....	893	358,828	353,694	18,250	18,700
May	139,198	119,187	102,406	185,600	70,161	101,416	32,205	59,991	.....	4440	343,970	471,634	30,749	27,800
June	147,678	106,506	93,490	151,609	65,356	90,563	26,448	29,882	.....	....	332,972	378,560	19,036	25,500
July	176,871	105,320	80,420	159,866	75,821	53,042	27.895	19,298	.....	....	361,007	339,256	12,751	25,250
August	115,306	128,054	139,102	163,995	54,713	120,663	55,235	20,752	.....	....	364,356	433,464	25,000	26,300
September	90,498	129,114	116,296	156,038	75,606	97,836	32,146	30,737	1,493	600	316,039	414,325	26,024	21,450
October	114,170	92,340	115,401	158,609	80,282	106,765	15,149	49,925	.....	1064	325,002	408,703	17,801	20,600
November	113,226	86,843	129,399	164,019	93,926	29,173	41,258	39,081	850	1100	378,659	320,216	19,950	27,600
December	119,823	114,564	142,188	149,797	81,802	48,937	29,693	23,813	.....	1542	373,506	338,653	29,420	25,207
Totals 1912	1,361,994		1,836,750		945,803		322,334		9,639		4,465,520		309,126	
1911	1,576,397		1,218,391		921,220		381,961		3,776		4,101,745		263,861	
1910	1,595,554		795,475		1,243,857		292,636		25,515		3,954,251		296,564	
1909	1,302,729		561,388		1,088,412		436,164		4,730				228,297	
1903	481,111		314,505		596,439		595,824		93,940		3,393,423		1,226,134	

*Courtesy of the Boston Chamber of Commerce, Statistics Department

[1] Includes small shipments from Washington and Georgetown. [2] Lamberts Point and Sewalls Point. [3] Almost exclusively from Louisburg, Cape Breton, except during 1903 when a large part came from Great Britain.

*50 Congress St., Boston, Mass.

to get output back to an off-year basis, but when the June receipts at tidewater accumulated to such a degree that car embargoes were threatened and it was a matter either of demurrage at Norfolk or losses here, the more far-sighted interests resolved upon $2.70 ($1.30 at the mine) or nothing. A general curtailment followed. Then, with a scarcity of labor and the foreign demand already mentioned, it was but a few weeks before conditions were well on the mend.

This concerted move to send coal to tidewater only on actual orders, was perhaps the most hopeful sign of the whole season in West Virginia. It showed that at last the Pocahontas and New River producers were tiring of the old practice of throwing away great tonnages of highest grade fuel just for the sake of making a dent in the market.

Three dollars and a half, f.o.b., was the level reached in November and December and, as an outcome of the year's generally flourishing business, there is an effort on foot to try for a contract price of $3, f.o.b., and to make the coal year begin Jan. 1 rather than Apr. 1.

Georges Creek

The receipts of Georges Creek, chiefly via Baltimore, were heavier than in 1911 and this would have been a record year for the Maryland output, but for the extreme car shortage that seriously affected shipments after Sept. 1.

A number of anthracite barges were engaged in freighting Georges Creek coal at low rates and the call for Pennsylvania coals was narrowed in consequence. But when prices at Hampton Roads dropped to $2.50@2.60, much of the early advantage was lost in materially reduced consignments for June and July.

The sluggish tone of the market did not cause the Georges Creek shippers to waver on price, however, and they thus furnished an object lesson to their more southerly competitors. The price remained firm, but beginning with September, slow loading was the rule at Baltimore and receipts the last of the year were trifling.

Only limited amounts came through for loading at Philadelphia or New York and supplies of Georges Creek for this market were practically out of the question for November and December. At the close of 1912, there was almost no offering by any of the numerous shippers, but if there had been, it would have commanded $2.15 @2.25 net at the mines.

The Pennsylvania Grades

It can safely be said the Clearfield, Somerset and other bituminous districts in Pennsylvania have enjoyed a satisfactory year. While in some sections prices were for several months no higher than in 1911, not enough even to pay for the advance conceded the mine-workers, yet profits averaged much better in 1912.

During January and February receipts at tidewater were so light that spot coal of the inferior kind was marked up to $1.25 and even to $1.40 at the mine, and there it fluctuated until the preferred grades disappeared from the market in March and up to $3.25 was paid the selling agencies for anything that was known to be *en route* when a country-wide strike was supposed to be imminent. The slump was so rapid in early April that operators were slow to realize what had happened and for some weeks the lowest figures were maintained in cleaning up the speculative coal that high prices had called forth.

Quite a volume was sacrificed down to 90c. and $1.00; then with slow resumption of mining, prices swung back to normal and the market settled into an unusual dullness. There was practically nothing forwarded except on orders and there was no surplus to be absorbed. The Cambrias and Somersets again went out of the market, shippers finding their hands full to furnish contract requirements, and Aug. 15 saw quotations 5c. @ 10c. up and by Sept. 1 old prices had been withdrawn.

The contract basis for fair Clearfields was about $1.15 @ 1.20 and for Somersets $1.25 @ 1.30 or 5c. higher than 1911 on all grades. The fancy brands of Cambria commanded $1.40 in most cases. Late in September all the popular coals were well sold up and from then on there was an advancing range of price on all the Pennsylvanias, varied only occasionally by an uneven demand.

TOTAL ANTHRACITE SHIPMENTS FOR THE PAST 12 YEARS BY MONTHS.

	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912
January.....	5,192,290	4,538,138	5,964,950	4,134,245	4,408,578	5,458,084	5,249,496	5,618,339	5,183,345	5,306,618	5,904,117	5,763,696
February.....	4,123,594	3,741,253	5,070,608	4,326,269	3,922,601	4,712,099	4,563,720	4,503,756	4,576,004	5,031,784	5,070,948	5,875,968
March.....	5,002,315	3,818,767	5,211,450	4,375,033	5,258,567	5,797,167	5,235,814	4,766,158	6,332,474	5,174,166	5,996,894	6,569,687
April.....	3,715,295	4,924,830	5,044,998	5,407,786	5,278,041	488,203	5,916,583	5,987,221	5,891,176	6,224,396	5,804,915	266,625
May.....	4,693,562	1,708,892	5,156,449	5,285,079	6,005,158	3,254,230	5,994,272	6,088,116	5,063,873	5,679,661	6,317,352	1,429,357
June.....	4,792,443	92,203	5,436,497	5,728,795	5,844,052	5,676,018	5,976,906	5,704,852	4,904,858	5,398,123	6,215,357	6,191,646
July.....	3,699,628	239,079	5,377,495	4,623,227	4,546,743	4,981,448	5,669,024	4,541,506	4,020,765	4,202,059	4,804,065	6,285,153
August.....	4,711,517	321,774	5,169,402	4,325,734	5,401,838	5,400,511	5,795,347	4,599,093	4,198,273	4,996,044	5,531,796	6,576,591
September....	4,379,143	455,883	4,654,444	3,967,600	5,082,232	4,527,886	5,512,717	5,211,047	4,416,120	4,967,516	5,730,935	5,876,496
October.....	4,938,033	1,276,257	3,925,642	5,131,542	5,205,694	5,384,768	6,108,065	5,977,497	5,579,759	5,622,095	6,269,179	6,665,321
November....	4,697,329	4,984,384	4,091,147	5,124,068	5,421,584	5,182, 53	5,743,522	5,839,491	6,027,800	6,071,746	6,193,314	6,165,536
December....	3,623,453	5,099,431	4,259,748	5,063,144	5,395,113	4,836,028	5,343,477	5,827,938	5,775,438	6,231,578	6,115,427	5,944,502
Total.....	53,568,602	31,200,891	59,362,830	57,492,522	61,410,201	55,698,595	67,109,393	64,665,014	61,969,885	64,905,786	69,954,299	63,610,478

Transportation

Throughout the year water freights moved up and down with the demand for coal. The March "flurry" and the anxiety to cover tonnage before 1911-1912 contracts expired, caused a run up in rates from $1.00 @ 1.10 in February to $1.40 @ 1.50 on large vessels, Hampton Roads to Boston. With old business out of the way and the Virginia terminals catering mostly to off-shore steamers, together with a considerable amount of anthracite transportation freed from its usual service, vessel freights eased off to 70c. in May and carriers went begging. Owners preferred tying up to accepting less than 70c. A brisk demand early in September moved the current rate to 95c. and $1 with short time guaranteed for loading. Then the extreme detention at Hampton Roads and at Baltimore so discouraged vessel owners that at the end of December many had chartered into other trades.

Receipts were so light in the Chesapeake the last of the year that some of these colliers have also closed for other freighting, two at least taking grain to Europe. For the most part 1912 was a profitless year for sailing vessels.

Several small vessels took freights up to $2.00 out of New York for eastern points, in October and November.

Anthracite

New England has had a troublous year in anthracite. From Jan. 1, there was no time when more than hand-to-mouth deliveries could be had, and a more trying year to the distributor, wholesale or retail, would be hard to imagine. A prolonged season of extreme cold followed on the shortage that had been apparent since Sept. 1911. The smaller producing companies were out of business so far as the East was concerned, and to provide a climax a bitterly fought anthracite strike Apr. 1 seemed a foregone conclusion.

The "suspension" actually lasted only to May 23, but the loss of practically two of what are normally heavy months for production put the market several million tons in arrears, and 1912 ended with New England still far behind on its usual tonnage. Dealers everywhere had more than they could do to keep abreast of their trade even though every known expedient was resorted to.

New circular prices were announced June 1, with 25c. advance on all sizes as compared with prices effective the same month in 1911, or 45c up compared with April, 1911. In addition to the increased contract price on broken announced Jan. 1, 1912, $5.00 instead of $4.75 alongside Boston, an advance in pea was effective Nov. 1, making the new price $4.25 instead of $4.00 alongside Boston. In December another change was made by some of the companies shipping from New York, namely; a 15c. higher water freight on anthracite barges, or 65c. to Boston and Boston points rather than the 50c that had obtained for more than a dozen years.

All this scaling up is of great interest to the public and there are many signs of restiveness. Retail prices through New England were from 75c @ $1.50 higher than the same season in 1911. This is difficult for people generally to understand and quite as difficult for dealers to explain.

The saving factor in the whole situation was the wonderfully consistent mild weather all the later months, a circumstance that has enabled the companies to send east certain supplies that would otherwise have been directed to the big city markets. This was shown very plainly when a slightly colder day in New York practically closed the gate for consignments outside the harbor.

Retailers here were therefore sparing in deliveries and conserved their small stocks. Had the weather been otherwise there is no saying what distress might have followed. Boston retail prices were advanced to $8.25 for stove and chestnut Oct. 1 and were held there through the rest of the year.

The past twelve months have fulfilled certain predictions that were freely made; that a new high figure would be reached for the volume of business and hence also for the movement of freight. Railroad equipment had not kept step with the prospect and we had our great shortage of cars.

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The Situation at Hampton Roads in 1912

SYNOPSIS—Dumping at Hampton Roads for 1912 exceeded that for the previous year by one and a half million tons. Trade was quite good on the whole and prices entirely satisfactory. Many improvements and additions are under way which will greatly increase the capacity of the port.

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Hampton Roads has experienced the most unique year in its history. Over a million and a half tons more was dumped than during any preceding year. Altogether it has been a very prosperous year for Hampton Roads shippers; no failures are recorded in the coal industry, and on the other hand, new organizations have appeared in the field, and the older ones have broadened out and grown in proportion with the gradual increase of business. The value of the coal put afloat at these ports in 1912, estimating it at $2.60 a ton, which is a fair average price, is about twenty-nine millions of dollars.

Naturally the railroads have played their part in the prosperity of the port, and made numerous improvements, purchased equipment and locomotives, and improved in other directions in order to better serve the mines located on their respective lines. Both the Chesapeake & Ohio and the Norfolk & Western have begun work on new piers during the past year, which when completed will further the efficiency of Hampton Roads as a coaling port. It is still a matter of speculation as to what effect the completion of the Panama Canal will have on the export of coal from Hampton Roads, but it is the consensus of opinion that this port will very shortly be surpassed by few in volume of business handled and by none in facilities and supply of high quality coal; these facts are already being more and more recognized by domestic as well as foreign traders and consumers.

Curtailment in the Early Part of the Year

During the months of March and April, when the light demand is felt for steam coals, and curtailments in mining are generally resorted to, local shippers found a ready market for their product, which was placed with consumers heretofore using practically none other than British coals, this stroke of good fortune being brought about by the British coal strike. Even though this strike was of only a few weeks' duration, during this period not less than a quarter million tons of steam coals moved out of Hampton Roads bought by foreign dealers for consumers, until then, using only British coals. Prices at this time ranged higher than known here for ten years, New River-Pocahontas mine-run coal being readily taken up at upward of $4 a gross ton f.o.b. the local piers. Incidentally a long sought opportunity was here given to place American coals with users of British fuels, and to better acquaint such consumers with the efficiency of the smokeless grade especially. The results in the latter respect were highly gratifying and aside from the "smalls" (as continually dwelt upon by foreign coal-trade papers), Hampton Roads smokeless coals were found as high in efficiency as the best grades of Welsh coals. (It will be noted that about this time we find the largest dumping for one month during 1912.)

During the early summer months the demand for steam coal held up remarkably well, an unusually large tonnage being moved to New England ports. While it has been

customary for a number of years to curtail shipments during the summer, the good demand for coal here obviated the necessity of such a step to any noticeable extent. As soon as the lake season opened up the greater portion of the coal from the New River-Pocahontas district was moved West. The market at tidewater not being flooded with large quantities of unsold coal, prices remained quite firm. About this time large tonnages of coke were exported from here and for a time it looked as if this feature of the business would assume proportions worthy a second consideration, but during the closing months of the year, the tonnage dumped did not measure up to expectations based on the summer performance. Nearly all the coke during the year was handled by the Norfolk & Western Ry. The Virginian Ry. handled none, and the Chesapeake & Ohio only a few hundred tons, at Hampton Roads.

Early in the fall indications pointed to a good winter business. Predictions came true, materializing earlier than expected, and by the middle of October it was difficult to obtain any quantity of standard smokeless coal at any price. The car-shortage question became serious on the Norfolk & Western, and Chesapeake & Ohio railroads about this time and continued to grow worse daily. So bad were conditions that a number of the mines only worked two and three days a week. What free coal was now on the market was eagerly taken up at prices ranging from 50c. to 75c. a ton higher than that at which most of the year's contracts were closed. This demand did not lessen to any extent, as the year came to a close, although during the early part of December (due to the moderate weather prevailing during the entire fall) the demand weakened slightly and prices seemed destined to decline somewhat, but on account of the curtailed output brought about by an inadequate car supply and insufficient labor, no accumulation of coal was effected, and consequently prices remained high; what few sales of standard smokeless coal were made, came near to the high-water mark of the year.

The high volatile (free burning) coals which had been shipped to Hampton Roads in limited quantities from time to time, on account of the light demand in the open market, were readily taken up during the stringent smokeless period by consumers who heretofore would entertain the use of smokeless coals only, but being unable to obtain these, found the Hampton Roads high-volatile coals an excellent substitute. It is well to mention here that during December, the Virginian Ry. overtook and passed the Chesapeake & Ohio Ry. in point of number of tons of coal put over their Hampton Roads piers, the Virginian's total for the month being 256,457 tons, while that of the Chesapeake & Ohio was 226,344.

Increase in Bunkering Trade

A marked increase in the bunkering business was noted during the closing weeks of 1912. This was attributed by some to the cheapness of supplies here as compared with other ports, although traffic in American waters, especially cotton from Southern ports, was unusually heavy during this period. Late in December prices for coal for steamship use during 1913 were announced, and found to be 30c. a ton higher than during the closing year.

Prices prevailing on smokeless coal during 1912 were as follows:

	High	Low		High	Low
January	$2.70	$2.50	July	$2.70	$2.45
February	2.70	2.50	August	2.70	2.50
March	5.50	2.50	September	2.80	2.50
April	4.50	2.50	October	3.25	2.60
May	3.50	2.50	November	3.25	2.60
June	2.70	2.45	December	3.55	2.60

A statement of the dumpings during 1912 over the piers at Lamberts Point, Norfolk, Sewalls Point, and Newport News, in detail follow:

Month	N. & W.	Virginian	C. & O.
January	403,881	171,806	321,210
February	413,897	190,689	308,898
March	468,883	207,552	340,521
April	571,187	166,176	475,301
May	511,785	189,689	370,885
June	424,167	174,324	290,622
July	442,818	215,637	311,751
August	423,571	223,150	332,194
September	404,016	243,272	282,492
October	406,606	239,161	275,024
November	347,255	182,242	228,373
December	361,062	256,457	226,344
Total	5,213,773	2,473,145	3,763,615

Grand total for three roads during 1912 was 11,450,533, as compared with 9,981,431 for 1911.

The Philadelphia Coal Trade

By C. B. Beers

The closing of the year 1912 ended or rather was the culminating point of one of the best seasons of business that has been enjoyed in this vicinity for several years past. In fact, it may be said to have been a banner year. It is true that scarcity of coal prevailed throughout this entire period, and that it was almost impossible to get sufficient supplies to satisfy the trade, but from the standpoint of business, it was a year never to be forgotten. It was not so much a question of securing business, for there was plenty of that, but the difficulty seemed to be that there was not sufficient of the necessary coal to go around. It is true that this condition of affairs become more apparent after the resumption of mining on June 1, but even before the strike, which lasted two months, there was no one day or week, when it could be said that there was any surplus of anthracite coal.

The beginning of the year 1912 saw the trade in a very satisfactory condition. The demand was good for all sizes, from broken to barley. On Jan. 1, 1912, there was an advance in the price of rice coal from 65c. to 85c., but it is understood that notwithstanding this increase, contracts were, as a rule, renewed at the new figure. Broken coal at tidewater was also advanced 25c. per ton.

All through the months of January and February the market readily absorbed the entire receipts of anthracite coal sent in this direction, and March found little if any coal in the yards of the dealers. Then came the first mutterings of trouble with the miners. The month of March registered the next to the largest production of anthracite coal in the history of this commodity.

Large users of the steam sizes who, as a rule, begin to be a little chary about laying in any unusual supplies at this time, utilized every inch of space they could spare for the storage of coal, some of them going to considerable expense in renting for a certain period, plots of unimproved property for the storage of additional fuel.

Dealers, as a rule, during the month of March, limit their purchases to their actual necessities, but winter extended itself well into this month, and with the prospect of strife with the miners, they were all anxious to secure supplies for possible householders who were not willing to take any chances on securing their winter requirements, having in mind the discomforts of the year 1902.

What the dealers had predicted or rather felt would be the case, came to pass. When every indication pointed to trouble with the miners, orders came in faster than they could be filled comfortably, and it is a fact, that the business in this vicinity for the month of March, 1912, far exceeded the business for any corresponding period.

Then came the suspension of work at the mines. During this time, while there was a complete cessation of production, the large companies were successful in disposing of quite a quantity of the steam sizes of coal they had in stock. The domestic sizes had been pretty well cleaned out by the demand of the winter previous.

After settlement of the strike, it was perfectly apparent that there was going to be trouble in securing sufficient supplies of coal. During the summer, while the demand was good, it was not insistent in this vicinity, and it was not until the early fall that dealers were unable to secure as much tonnage as they required. It came as welcome news to the dealers that mining operations had been resumed, but it might not have been so welcome, if they had known what difficulty and trouble they were to have in getting supplies of coal later in the year.

Early fall found the dealers very short of all sizes, and this condition continued chronic. The city of Philadelphia receives, almost without variation, about 4,000,000 tons of anthracite coal annually. It is understood, with the year ending Dec. 31, 1912, there will be a falling off in this amount of anywhere from 15 to 20 per cent., owing to the unusual situation that has prevailed since the resumption of mining. There is every indication that this dearth of supplies is likely to last well on into the spring of 1913.

Premium coal came to this city in fairly large quantities, although it is not too much to say that the amount has been probably exaggerated, isolated cases sometimes being taken as a general condition.

It was encouraging to note that the best of harmony seemed to exist among the dealers, and price cutting on any of the sizes was not heard of. Of course, it was an unusual year, but under favorable circumstances, the temptation to secure good business has sometimes resulted in the shading of figures.

With the close of the year retail prices remained: Egg, $6.75; stove, $7; chestnut, $7.25, and pea, $5.25 to $5.50.

The wholesale market enjoyed, of course, its large season of prosperity, being a reflection of the extraordinary demand prevailing, and the operators were hard pressed to know who and what to serve. However, there is every indication that the distribution of what they had was made as equitably as possible, every effort being made to see that each dealer received his fair proportion, and with the handicap of a 12,000,000 to 15,000,000 shortage staring them in the face, it was doubtless very often a difficult matter to place the output where it would do the most good.

Taking the year as a whole, it has been a very prosperous one, referring to one's peace of mind, and the balance sheet of both the wholesale and retail operator is likely to show up on the right side, and compare very favorably with any previous years.

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The Pittsburgh District in 1912

By B. E. V. Luty*

SYNOPSIS—Production in the Pittsburgh district during 1912 was quite heavy, but labor troubles and lack of adequate transportation facilities disturbed operations to such an extent that the year proved to be another unsatisfactory one from a financial standpoint. The most important episode of the year was the favorable decision obtained by the Pittsburgh operators in the Pittsburgh-Lake Rate case, the effects of which were, however, immediately eliminated by an equal reduction on roads in competitive fields. In the Connellsville coke regions, determined efforts on the part of both producers and consumers to control the market, resulted in spectacular fluctuations in quotations, with prices ultimately reaching the highest point in the history of the district.

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The Pittsburgh district coal operators, as a whole, experienced another unsatisfactory year in 1912, from the standpoint of financial results. Our review of 1911 noted that the results of that year had been unsatisfactory in this way also. The prospects for 1912 were better, and the tonnage on the whole was good. The cost of mining was increased, through the wage advance, but operators allowed for this. They made close prices and, figuring on a much larger tonnage than in 1911, expected to make a fair profit through reduction in overhead charges per ton. The unsatisfactory financial result, the disappointment in view of the expectations entertained, is attributed to the fact that, on account of short car supply and insufficient labor, operations were very intermittent and the cost of production was accordingly much higher than was anticipated. The supply of cars and labor was not uniformly bad throughout the year, but it was frequently poor, and irregularities, by disturbing plans, produced possibly worse results than would have occurred with a uniformly inadequate supply, which would have caused the plan of attack to be different.

The coal market was seriously disturbed by the unexpectedly quick settlement of the biennial wage scale, an agreement being reached between operators' and the miners' representatives at Cleveland on Friday, March 29. While the men did not return in a body until the referendum vote was completed, the suspension lasted only about three weeks. Probably the general expectation among consumers was that it would last four to six weeks, perhaps longer, and stocks had been laid in accordingly, so that the early resumption of mining found the trade with little demand. Possibly the operators were hastened in reaching a settlement by the fact that on March 1 more than a million men quitted the English coal mines, but that strike did not give the United States the demand that was expected. The wage settlement, for the two years to the end Mar. 30, 1914, was on the basis of an advance in the general mining rate of from 95c. to $1, following a similar advance made in the 1910 settlement.

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The year opened with circular prices on the basis of $1.15 for mine-run, and these were fairly well held in the first three months, owing to there being a demand for stocking-up purposes against the expected suspension of mining. After the settlement, circular prices were promulgated on the basis of $1.22½, but there was heavy cutting to below even the $1.15 basis, and mine-run coal for a considerable time was easy at about a dollar a ton. With a heavy lake movement, and materially increased demand from manufacturing consumers, prices began to stiffen in the summer and by September a general shortage of coal had developed. The Pittsburgh district could do little toward overcoming this, being handicapped by an insufficient supply of both cars and labor. The difficulty was as much with irregular working by the men as it was with a shortage in the actual number. In October, Pittsburgh coal for prompt shipment practically disappeared from the market, small lots commanding fancy prices. Towards the close of the Lake season one large operator named circular prices on the basis of $1.25 for mine-run, but later, on Nov. 4, the Pittsburgh Coal Co. issued quotations on the basis of $1.30, slack being 90c., nut and slack $1.05, nut, $1.25, mine-run, $1.30, ¾-in., $1.40 and 1¼-in., $1.55.

The scarcity of coal was entirely relieved at the close of the lake shipping season and the market became relatively easy, though with no serious price cutting. Operators showed a fresh determination to secure a reasonable price for coal, and allow for the contingency of irregular working in figuring the cost of production and will no doubt, consider this in the future.

An event of some importance in the Pittsburgh-Lake trade was the reduction ordered in the freight rate, to go into effect May 1, 1912. For many years the rate had been 88c. and the Pittsburgh district operators, in what was called the Boileau case, demanded a reduction to give the district a portion, at least, of the advantage which its location would give it over the West Virginia and Kentucky fields. The Commission ordered a reduction to 78c., but the railroads followed this by lowering the other rates also, so that the discrimination still remained; the operators took up the case again, in their brief No. 3853, but without avail. Upon complaint of the Pittsburgh Vein Operators' Association of Ohio, submitted Apr. 6, 1912, and decided June 6, 1912, the Commission ordered a reduction in the rate from Pittsburgh No. 8 field to Lake Erie from 85c. to 75c., to restore the former differential between the Pittsburgh district and Pittsburgh No. 8.

Connellsville Coke

From November, 1911, to December, 1912, the Connellsville coke region saw the most spectacular advance in prices in its whole history, the advance occurring chiefly in 1912. In November, 1911, furnace coke for prompt shipment could easily be secured at $1.50, and the early contracts made for the first half of 1912 were at $1.55, and $1.60, contracts for the whole year being made at $1.60 and $1.65. Toward the close of December the prompt price advanced sharply, a normal performance as shipments are usually deficient over the holidays. In January, however, the market did not recede, but reached higher levels for prompt, while contract coke sold above $1.75. In April there occurred further advances, coke becoming scarcer on account of coal shipments due to the mining suspension in the union coal mining districts, and prompt furnace coke sold at $2.50 and $2.60.

Half Year Contract Prices Mount to $3.50 Per Ton

Then a number of operators decided to market their product through a Pittsburgh brokerage firm and a price of $2.50 was asked upon second half contracts. The furnace trade immediately arose in arms and a long deadlock ensued. Finally, towards the close of July, with charges and counter charges of bad faith, the brokerage firm withdrew, taking with it a number of contracts it had made for the purchase of coke. Several of the operators thus released made an arrangement with a Uniontown brokerage firm and a period of competition ensued. A condition of great activity in the iron trade had meanwhile produced a heavy demand for coke, while the capacity of the Connellsville region, little if any increased, nominally during the three years preceding when the blast furnace capacity had been materially increased, was not fully available on account of scarcity of labor. To a disinterested observer, the conditions in August seemed to justify a $2.50 contract price much more than did those in June when that mark was set, but contracts were made in August at $2.15 and $2.25. Later, when the question of contracts for 1913 came up, the Uniontown firm sold freely at $2.50. When it was sold out the market continued to advance, and in December the contract market for 1913 was close to $3.50 for the half year and near $3.25 for the year. The nearest recent approach to such prices was in October, 1909, when for a short time the market for 1910 was $2.90 to $3, with a few contracts placed at that range.

The understanding which certain sellers attempted to maintain in the summer seems to have retarded rather than to have accelerated the advance. The final figures of the year were reached under open competitive conditions, and were caused by the very simple fact that the coke producing capacity of the country, at least with the labor supply available, was insufficient to supply the furnaces for the pig iron output for which there was an assured demand. From November, 1911, to December, 1912, the advance in prompt furnace coke was from $1.50 to $4, and in contract from $1.55 and $1.60 to $3.25 or $3.50. As about 2200 lb. of coke are needed to make a ton of pig iron, the advance in the contract price increased the cost of making iron by approximately $2; the advance in this latter over the same period was approximately $4. An advance in ore occurred, increasing the cost of making pig iron by $1 a ton. At the low point for pig iron, there was an actual loss for the average furnace, and with raw materials advanced an equivalent of $3 a ton, the $4 advance simply allowed the merchant furnace to break about even.

The circumstances all showed clearly that the coke producing capacity of the country is insufficient. The building of blast furnaces proceeded more rapidly in the five years 1907 to 1912 than the development of coke making capacity. The capacity of the Connellsville region was practically stationary, naturally enough when at the prevailing rate of output the region would be exhausted in 25 to 30 years.

Market Conditions in Ohio During 1912

By J. W. Lehman*

SYNOPSIS—The year as a whole was fairly satisfactory with an increase in production of about 10 per cent. over 1911. This result was attained despite a month's idleness in April and two periods of car shortage. Perhaps the most striking feature of the entire year was the demand for steam coal which was merely the reflection of industrial prosperity.

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The year 1912 was a fairly good one in the Buckeye State both from a tonnage and a price standpoint. Although the former was not as much as in 1910, which was the banner year, but is estimated to be about 10 per cent. over the output of 1911. The estimated production during the calendar year was in the neighborhood of 33,340,000 tons.

Prices were more satisfactory from start to finish. While coal operators and jobbers did not make a large profit on their investment during the year the returns were in the main much more satisfactory than in 1911. Price cutting was less prevalent during the past twelve months and small operators and shippers were able to sell their coal without resorting to shaving quotations. The general tone of the market was healthier and the year 1913 appears with a much better outlook.

The circular put into effect Sept. 1, 1911 by Hocking Valley operators prevailed during the greater part of the year. This circular was generally lived up to although during the summer months there was some discounting from the list and some price cutting. But generally speaking, all operators who had a good grade of coal to sell could get the circular figure. Domestic lump was quoted at $1.50 and ¾-in. screened at $1.35. Mine-run was quoted at $1.15 and nut held at the same figure. The market for the fine sizes such as nut, pea and slack and coarse slack was varied and depended exclusively upon local conditions. Some small inflation occurred just previous to April 1, when large users of steam grades and many railroad companies stocked up to guard against emergencies. The two-year mining scale between operators and miners in the central competitive district expired at that time and there was considerable doubt of an early adjustment. Accordingly many of the larger manufacturing plants laid in a goodly fuel supply and the larger railroad systems stocked thousands and even hundreds of thousands of tons.

Then came the suspension which lasted a full month. In Eastern Ohio districts some of the mines resumed before the month was up, but generally speaking there was an almost complete cessation of work during April. After negotiations which lasted a week or 10 days the new scale was reached, which provided an increase of 5 cents per ton, on the pick-mine plan. Other branches of labor were given a like increase. District meetings were held and the various minor problems were mostly worked out by May 1, when mines in every district were opened. It required several weeks however for the mines to get into full operation.

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The fact of the suspension, coupled with the noticeable revival in manufacturing business after June 1, caused a good demand for all grades. Another aid was the good lake traffic as the docks of the Northwest clamored for all the tonnage possible. The extra severe winter of 1911-1912 had the effect of using all of the surplus tonnage in that section and accordingly there was an unusual demand.

The next circular was issued Oct. 1, the advance being about 10 cents per ton. This was caused by the steady demand for all grades coupled with an increasing car shortage. Domestic lump was quoted at $1.75; ¾-in. screened at $1.55; and mine-run at $1.30. Domestic nut was sold at about the same price as mine-run. The prices on the small sizes again advanced in sympathy and 95c. to $1.10 was the usual figures.

An insistent demand together with a greater scarcity of cars caused another advance Oct. 21. Instead of advancing the price a small amount, the jump was fully a quarter and domestic lump was quoted at $2.00. For ¾-in. the price was strong at $1.80 and mine-run and nut were sold at $1.50 and even higher. Fine sizes were sold on the open market at anywhere between $1.10 and $1.35.

While no special circular was issued in November prices gradually became stronger until $2.25 was the usual quotation for domestic lump and ¾-in. was quoted at $2.00. Run of mine and nut were held as high as $1.75 and even stronger. It was during this period that fine coal at some points reached the $1.50 mark and even higher.

Mild weather caused a slump from the top prices of November and by Dec. 1, the usual quotations had been decreased to the circular figures of Oct. 21. During the latter part of the year a slight improvement was noted in the car supply which coupled with the higher temperatures which prevailed caused a softening. But no great weakness developed and the market is now at the complete mercy of weather conditions and the car supply.

In the other sections quotations ranged about the same, relatively as in the Hocking field. Pomeroy Bend, which is getting to be one of the important mining districts of the Buckeye State has maintained a slightly higher schedule than the Hocking Valley. The differential is somewhere between 15 and 25 cents. The field succeeded in maintaining a $1.65 circular for domestic lump the greater part of the summer although at times some coal was sold at $1.50. But with the appearance of the car shortage, which affected Pomeroy Bend more severely than any other section, prices were jumped until in October and November they were $2.35 to 2.50 for domestic lump and $2.15 to 2.35 for three-quarter inch. Fine coal in this field ranged as high as $1.65 but that point was not maintained for any length of time.

Prices in Eastern Ohio were the last to respond to the increase in other fields towards the latter part of the season. During the early part of the year ¾-in. was quoted at $1.15 and $1.20 and mine-run as low as 95c. and $1. But with the approach of the car shortage in September

prices were strengthened, but it was later before any great increase was noted. During the period of inflation in October and November three-quarter inch was sold as high as $1.65 and mine-run up to $1.50. Course slack, the grade of fine coal produced in that field was sold up to $1.25 but soon fell to $1.10 and $1.15 where it closed the year.

While figures on the year's production are not yet available authorities are busy estimating the output of the Buckeye state. As stated above it is generally conceded that there is a slight advance, likely 10 to 12½ per cent. over the previous year. This means that the production is somewhere between 33,400,000 and 34,000,000 tons.

The largest increase in any field will be in Eastern Ohio although no great development work was done in that section. Belmont County as in previous years shows up the best in point of production with possibly Jefferson County second. In the Hocking Valley, Athens County is the leader with Perry County, second. In the Cambridge field, Guernsey County will show up well with a production estimated as over 3,000,000 and possibly 4,000,000 tons.

Generally speaking the Hocking Valley will have only a slight increase if any over the records of 1911. This is due to the insufficient car supply and to a number of petty strikes which tended to curtail the production. In Meigs County which is the whole of the Pomeroy Bend field the production is estimated at 750,000 tons which is about 10 per cent. increase over the previous year.

The records of the Toledo docks of the Hocking Valley railroad for the year 1912 in comparison with 1911 are very interesting. They show the tonnage handled from Ohio and West Virginia during the past year to be in excess of 1911, 75,000 tons. The modern dock machinery at Toledo is one of the factors of the Lake trade and aids in having the Hocking Valley R.R. act as final carrier in many coal shipments from West Virginia.

Steam prices during the coming year will be much more satisfactory to the operator. Contracts which are being renewed at this time are at a more profitable rate. The lower ones are being increased or dropped altogether and the better ones are being renewed at the old figures. In the department of railroad fuel the most radical changes are contemplated. The low railroad fuel contracts are believed to be a thing of the past in the Buckeye state and this branch of the business will be looked to for its share of profits.

Practically no development work was done in the state during the year. This is partially due to the fact that 1911 was a lean year both as to tonnage and prices and as a consequence there was very little encouragement for any new mines to be opened. But in some instances mines were enlarged and the tonnage increased which makes the net result a better output in Ohio. Very few mines were abandoned because they were worked out and the small tonnage thus lost is more than counterbalanced by increased output from other workings.

Outside of the suspension of a month in April when the wage scale was signed there was practically no labor troubles during the year. Generally speaking labor was plentiful and petty differences were not as numerous as usual. One of the largest and most important troubles was the strike ordered at the mine of the Hisylvania Coal Co. at Glouster where the right to discharge for carelessness is involved. It is expected this strike will be settled in the near future.

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A Brisk Buffalo Market in 1912

SYNOPSIS—Buffalo is a center for shipments to Canada and an important port for upper Lake shipments. Some of the prices asked during the year were fictitious, the jobbers who were shipping coal being temporarily undesirous of local trade.

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The history of the coal trade throughout showed little incident during the early part of the year. Bituminous coal was still dull, as it had been for the whole of the past year or two. The consumer was entirely in control of prices, on account of the light consumption and the over production. Operators complained that they were not always able to make running expenses and some old members of the Allegheny Valley operating trade became so discouraged that they declared without hesitation that they could see no future before it. With the thin seams, so expensive to work, and the price always decidedly lower than that of Pittsburgh coal, it looked hopeless. There was always quite an amount of coal land for sale, but there were no buyers among those who understood the conditions. All that saved the market and kept the mines running was the diversion of Pittsburgh coal to other points on the lakes. Moreover, higher freight rates kept the cheaply-mined West Virginia coal out of the market.

The bituminous jobber was more hopeful. He had less at stake and he always insisted on a profit, though he often worked on a margin of 5c. a ton. In order to make any showing it was necessary to handle a big tonnage and as a rule this was done. Buffalo covers a wide district, not only in this state and eastward, but through Canada, making shipments via Detroit as far west as London, Ont., and getting into Montreal in the other direction and competing with the coal from Nova Scotia. This railroad market does not cover the upper lakes, however. The rate of freight from the mines to the lakes is sufficiently above that from Pittsburgh that such trade is entirely cut off.

On the other hand, the lake movement of anthracite is largest here, having no competition as to tonnage except from Erie, Oswego and one or two minor Lake Ontario ports, which latter usually confine their shipments to ports on that lake or the St. Lawrence River, so that Buffalo ships about five-sixths of the coal which goes by water to the upper lakes.

It has been the custom of certain leading mine owners in Pittsburgh to make a Buffalo price, covering, of course, the freight rate of $1.25 from that district. The price for 1911 had been on the basis of $2.40 net for mine-run. This had been fixed to take effect on Apr. 1, 1911, and business was so dull that even the fall trade did not materially change it and the figures were still in force at the opening of April, 1912. There had been an increase

of mining wages, however, and it was felt that some return must be demanded on that score, so the Buffalo price was made $2.47½ for mine-run, with three-quarter 15, and lump 25c. higher and slack about $2, but subject to more fluctuation.

This price grew steadily stronger as consumption increased through the summer, and anthracite became scarcer, till on the week ending Sept. 20 it advanced to $2.50, with the following further fluctuations through the year: Oct. 11, $2.55; Oct. 18, $2.70; Oct. 25, $2.85; Nov. 22, $3.15; Nov. 29, $2.65 for contract; Dec. 6, $2.90.

Here is a steady advance of 40c. from the low point, which had been maintained for more than a year, or over 17 per cent. In spite of the fact that a great part of the bituminous coal had been tied up in the spring by contracts at $2.10, or so, this at once put the trade on its feet, where it will remain so long as the consumption exceeds the output. An explanation is needed of the peculiarly sharp advance made for a short time in November and the prompt decline a short time later. The prospective closing of the lakes with insufficient coal shipped by that route to last till spring caused the mines in that trade to issue price quotations which were in a sense fictitious, in order to shut off orders. Soon after the closing of the lakes a surplus was produced, and in adjusting itself the market for a short time was too low.

The Allegheny Valley market, which does not depend on the lake trade, did not show either of these fluctuations, and though its coal commonly sells at 15 to 25c. less than Pittsburgh, there was for a short time the anomalous state of the two markets which placed Allegheny Valley coal above Pittsburgh prices. There is not so very much competition between the two, as a rule, as each finds its own market.

In the anthracite trade the shortage has been so great that the year has shown many peculiarities While the larger mines made no advance in price on that account, the independent interests were released from the old arrangement of turning over their coal to the roads at 65 per cent. of the tidewater price, and they at once went into the open market and sold their coal at a premium.

Aided by a hue and cry from the daily press that "coal" was about to advance to $10 a ton, the independent operators early began to get a premium, which in some cases where quick delivery could be assured, rose to $2.50 a ton, and would doubtless have remained there but for the warm fall. On Dec. 20, the premium had fallen to $1.25, on account of the gain made on their shortage by the bigger anthracite companies. On that date a leading shipper declared that with a continuation of the mild weather he would cut out the premium entirely in ten days.

It is common for the anthracite shippers to load a large amount of coal in Buffalo harbor during the winter. The larger sizes commonly accumulate during the latter part of that season, and it is cheaper to put such coal afloat at an extra freight of 10 to 15c. a ton than to stock it, especially since it enables the lake shipments to begin in full strength on the opening of the lakes. So hard was the winter, however, that no coal could be so loaded last spring, and with a two-months' mining suspension to face, there were only 650 tons shipped by lake in April and only 39,600 tons in May, so that the resumption of mining at the end of the latter month found the lake shipments of anthracite from Buffalo about 700,000 tons behind that of former seasons. Only by mighty efforts have they been able to make up that shortage. The following figures will show that this has practically been done:

LAKE SHIPMENTS OF ANTHRACITE BY MONTHS

	1910	1911	1912
March	25,541	.....	.....
April	418,638	193,325	650
May	482,289	412,694	39,600
June	430,800	590,265	440.250
July	493,450	711,539	606,885
August	522,550	573,466	713,547
September	331,190	428,280	681,421
October	426,250	470,760	759,300
November	486,300	498,650	614,600
December	21,600	38,450	68,600
Totals	3,639,368	3,917,429	3,925,083

The late start in 1911, shown by the above table, is on account of late lake opening, but the suspension of mining is responsible for the lateness in 1912.

TOTAL COAL AND COKE EXPORTS FROM BUFFALO

	Anthracite	Bituminous	Coke
1912, January	99,957	254,267	29,136
February	78,154	276,267	27,476
March	113,845	305,831	35,977
April	19,285	290,492	36,651
May	3,123	169,201	42,275
June	94,013	124,107	26,517
July	168,274	149,590	38,993
August	160,454	199,239	40,353
September	137,131	193,371	29,869
October	154,075	211,971	35,175
November	106,515	199,459	33,239
December	99,734	235,294	47,823
Totals, 1912	1,234,564	2,609,702	423,524
Totals, 1911	1,695,035	2,620,727	416,069
Totals, 1910	931,378	2,014,762	420,805

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Birmingham, Ala.

SPECIAL CORRESPONDENCE

The coal market for the year 1912 has been a cause of much satisfaction, when the whole year is considered. All the owners of well managed mines have profited beyond their expectations and are highly optimistic in regard to the prospects for 1913.

The winter of 1911 and 1912 was about the severest ever experienced and coal business was correspondingly good. To add to this favorable situation the English strike lasted well into spring. The season was unusually cold and wet, and from the first of the year to July 1 all output records were beaten. The expectation of a strike in Pittsburgh on Apr. 1 served to stimulate the market and many users stocked up heavily for fear that the trouble might become nation wide.

During the summer months this artificial market reacted and worked a hardship on many of the mines for a short while. The car shortage has been and is still serious on some of the railroads in the district, and this reduction in tonnage during the fall and winter resulted in abnormal prices on both steam and domestic coals.

The coke market as a whole has been satisfactory and the average price a fair one. The estimated coal output of Alabama for 1912 is 18,000,000 tons which is about 2,000,000 tons higher than the record of 1910.

MONTHLY PRICES OF CAHABA FANCY LUMP DOMESTIC COAL

	1908	1909	1910	1911	1912
March, April	2.00	2.00	2.10	2.10	2.25
May	2.25	2.25	2.30	2.30	2.35
June	2.35	2.25	2.40	2.40	2.50
July	2.50	2.50	2.55	2.55	2.60
August	2.65	2.50	2.65	2.65	2.70
September	2.75	2.75	2.75	2.75	2.85
October, November, December, January, February	2.75	2.75	3.00	3.00	3.00

These figures will be interesting to parties who are not in the coal trade and who are prone to condemn the retail coal dealers on account of high profits apparently made by them. However, in justice to the mines producing Cahaba domestic coal, it must be understood that these prices are on Fancy Lump coal, which is the cream of their product. The average price obtained for the entire output of the mines is probably less than one-half the prices quoted.

Mississippi Valley Trade in 1912

By E. J. Wallace*

The year 1912 comes to a close as a rather successful one for the operators in the high-grade fields of Williamson, Franklin, Perry, Jackson and Saline Counties. The prices for the entire year have been above the average, and while, as usual, there was a car shortage that kept the buyer and large consumer in a rather uneasy position, yet it served to keep the price for the greater portion of time above the cost of production, in a field where the supply exceeds the demand.

The threatened suspension of last spring was a stimulant to the market until the bubble burst in April, and there was a curtailing of tonnage from that time until July 1, in order to get the market in a healthy condition. From then on, however, the demand has continued to grow, and with it the price, until at the close of 1912, the Illinois operator has a better looking profit column than for the past three or four years.

The Illinois field lost considerable ground in various sections during 1912, especially in Louisiana, Texas and Arkansas, on account of the expansion of the gas and oil fields. It also lost a large tonnage in the northern markets to the smokeless coals of West Virginia, and is failing to get its proportion of the business in the extreme Northwest on account of the growing popularity of better coals from the states of Wyoming and Colorado. With all this, however, the tonnage in the Illinois field the past year will show an increase of from 8 to 15 per cent.

Very few mines during the past year have been abandoned, while a considerable number of new ones have been opened, and the producing capacities of several others have been increased from 25 to 50 per cent. There are no complete figures at this time to show what the production for 1912 has been, but it is estimated at between 55,000,000 and 60,000,000 tons. The mines of the state can produce fully 100,000,000 tons, while the market for Illinois coal cannot take care of more than a little over half that amount. The over-production has occasionally forced Illinois coals into foreign markets at a price below cost.

The year 1912 has seen the starting of a coke industry in the state, at Joliet and other points in the northern and central sections. This coke is of a byproduct nature and will be used by the United States Steel Corporation and allied companies, in their own plants with little if any going to the open market.

In the inner belt field, which embraces the counties to the east of St. Louis and within a radius of 50 miles, there has been an increased output, but on account of the irregularity of its production it is hard to estimate its amount. This field has been kept down to such an extent that it is doubtful if a majority of the operators will make any money, as they have been practically running their mines without breaking even on the selling end of the business.

In the face of these conditions, new mines are gradually being sunk and the capacities of others increased, and it is a problem as to where this tonnage will move to in the course of the coming year.

St. Louis Coal Trade

Everything considered, the St. Louis market has been unusually good during 1912, as compared with other years.

The year started discouragingly, but the severe weather that followed and the threatened suspension kept the market in a healthy condition until the controversy between the miners and operators was settled. This event had a very distressing effect upon every coal field that caters to St. Louis, for it developed so hastily that hundreds of cars of coal that were being held in storage or which were in transit from outside fields, were thrown upon the market and sold at far less than the producing cost. This kept a poor market from March to July.

Since Aug. 1 there has been a gradually growing demand, with which prices have kept pace so that by the first of October the market went as high as at any time previous to the threatened suspension of last spring. The car shortage and lack of motive power on the principal coal roads in the Illinois field (from which St. Louis draws practically its entire supply) helped keep the prices up until the close of the year.

The past year has seen a big increase in the consumption of smokeless coal and coke—at least 75% greater than 1911, and smokeless fuels will continue to grow in favor. The amount of domestic coke consumed in the St. Louis market for 1912 is estimated at 175,000 tons net. The estimated West Virginia smokeless tonnage at from 75,000 to 100,000 tons. The coke and smokeless coals have displaced a large tonnage of anthracite in 1912, on account of the scarcity of the latter. As a rule there is an annual call for about from 250,000 to 300,000 tons of anthracite, but the irregular movement this year has brought the 1912 tonnage down to perhaps 150,000 net tons.

The Arkansas semi-anthracite field contributed largely in past years to the St. Louis market, but not more than 5000 tons have moved in during 1912. No Missouri coal enters, and only during strike times is there any movement of coals from Indiana or Kentucky.

Lignite in the United States

J. A. Holmes, director of the Bureau of Mines, gives the following table to illustrate the extent of lignite deposits in the United States:

	Lignite. Sq. miles.	Sub. Lignite. Sq. miles.
Alabama	6,000	
Louisiana	8,800	
Tennessee	1,000	
Arkansas	5,900	
Texas	53,000	
North Dakota	31,000	
Montana	7,000	8,800
Wyoming		21,360
Washington		1,100
New Mexico		5,000
Colorado		5,910
Idaho		1,200
Totals	116,700	43,370

*St. Louis, Mo.

EDITORIALS

Statistics of reasonable commercial accuracy, published promptly, are of much greater value to technology and trade than are figures corrected to the last unit, which are printed six months or a year later. We are sure there is a real need for an annual statistical number such as we are publishing today. Considerable time has been spent in an effort to make this issue of COAL AGE worthy of careful attention, and we believe the approximations given in the different reviews will prove to require only slight, if any, revision.

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A Suggestion to Mine Operators and State Inspectors

It is a fact that this country, of all the more civilized nations producing coal, is slowest in getting out accurate yearly production statistics. The U. S. Geological Survey, through its Division of Mineral Resources, makes an effort to fill the need for prompt and authentic coal-mining data, but the results have been unsatisfactory.

Perhaps the fault is largely with the federal officials, and undoubtedly the different state mine inspectors as individuals are greatly to blame; however, the owners and operators of mines are not above criticism. Frequently the companies delay their production returns for no reason other than negligence, and thus the work of issuing final figures showing total output is greatly hampered.

There is no reason why complete production figures for every coal company in America should not be in the hands of the chief state inspector one week after the close of the year, and the industry should have the final corrected totals before the end of January.

Then there is the matter of a common fiscal year for each and every state. In a number of cases the year closes June 30; in other instances, Sept. 30 is the time specified. Why can we not have all reports made out for the calendar year ending Dec. 31? Surely this plan would be simpler.

Every coal man in every state is vitally interested in the industry as a whole. Those inspectors who wish to improve both the efficiency and general value of their work, and at the same time gain a reputation for prompt, definite action, would do well to entertain the idea of abolishing the dilatory tactics now so prevalent. Of all abominations to the average mind, none is more abhorrent then archaic facts.

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Danger from Water Hammer

The liability of long steam lines to failure through water-hammer is a source of danger not generally recognized around mines. When pumps, fan engines or similar apparatus connected to such lines are shut down, unless they are continuously drained, a large amount of steam is certain to condense in the piping. This should be gradually and thoroughly drawn off before any attempt is made to start the machinery again.

After such a period of idleness even the sudden opening of a large drain valve near the end of the line may have disastrous results. Such a procedure puts the steam and water in the pipe in motion and the latter, provided its amount is sufficiently great, acts precisely as a liquid plunger or piston and strikes any obstruction or sharp bend in its path with the force and suddenness of a blow. This action is particularly destructive to cast pipe or fittings.

A recent accident in an English colliery, which resulted in the destruction of a portion of a long steam line connected to a fan engine, was attributed to this cause. It should be mentioned also, that, in disregarding the instructions of his superior and entirely closing the drain valve while his engine was shut down, and then attempting to draw off the water quickly by fully opening this valve, the unfortunate attendant paid the penalty of his disobedience with his life. Even in coal mining it usually pays to be careful and to obey instructions.

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Revision of the Pennsylvania Anthracite Code

The sub-committee of the commission appointed to revise and codify the present anthracite mining laws have recently submitted their report.

The commission appointed by Governor Tener, under the act of 1911, consisted of the folowing: Sterling R. Catlin, state senator, Wilkes-Barre; E. E. Jones, Harford; James E. Roderick, chief of Department of Mines, Harrisburg; H. C. Morgan, Scranton; Martin A. Nash, Glen Carbon; W. G. Robertson, Scranton; Peter O'Donnell, Wilkes-Barre; William D. Owens, West Pittston; William R. Reinhardt, Shamokin.

The commission organized by the election of Senator Catlin, chairman, and Peter O'Donnell, vice-chairman; William W. Hall, Wilkes-Barre, was appointed secretary and counsel. A sub-committee was then chosen to draft a suitable code for presentation to the commission for their consideration. The sub-committee consisted of James E. Roderick, Peter O'Donnell and William D. Owens.

The experience of Mr. Roderick, in the compilation of the first anthracite law (1870), and its amendment in 1885 and, later, as a member of the mine commission, appointed (1907) to revise the bituminous law, together with his knowledge of conditions as chief of the Department of Mines, rendered him capable of outlining to a large degree the work of the committee.

To say that the work of drafting such a code is gigantic, expresses but feebly the measure of the task. The difficulty of adjusting the many conflicting conditions would be and *is* superhuman, except as the several con-

tending parties, each striving for individual interests, are willing to recognize each others' rights, and enroll under a common standard, in the onward march of progress.

Carroll D. Wright, former commissioner of labor, is credited with saying that the difficulties surrounding the adjustment of interests between capital and labor are practically insurmountable, except by a mutual full recognition of the Golden Rule and the application of the principles of Christianity.

This statement, coming from one having the broad understanding of Commissioner Wright, is worthy of the most careful study and earnest consideration. Without the "mutual recognition" of the rights of another, we cannot hope for harmony; and without harmony there can be no permanent progress. Ignore the Golden Rule and it becomes impossible to frame a mining code that will be satisfactory to the operator and miner alike.

The first essential of a mining code is *equity*. The code must define clearly the responsibilities of employer and employee alike. There is no paternalism in the operation of a mine. Every man employed in the mine is responsible, to a degree, for his own safety and that of his fellows. SAFETY is the first consideration, to which the cost of operation must always be subordinate. The responsibility for safety is twofold; it does not rest wholly on the employer, but devolves alike on the employee. This division of responsibility must be clearly defined by the law governing mine operations.

The responsibility of the owner or operator ends with the provision of a recognized reasonably safe equipment and management of the mine and its operations, in conformity to the terms of an adequate mining code. The responsibility of the miner begins when he enters the mine. He must exercise reasonable care, observe proper precautions, possess a fair amount of knowledge of mining conditions, and obey absolutely the regulations of the mine and the instructions of the mine officials and fulfill all the requirements of the mining laws.

To every practical mining man nothing is plainer than the fact that every mineworker must assume certain legitimate risks common to his calling. A mining company does not run an insurance business or guarantee protection of life to employees, beyond a liability for accident due to the neglect or mismanagement of an official, or inefficient equipment.

Speaking of liability for accident, there are at least four responsible sources to which liability for accident may attach, and of these the first two are the only ones that can be said to offer a fair chance of recovery. They are as follows:

1. Neglect of government to provide adequate laws and inspection service;
2. Neglect or mismanagement of officials or inefficient equipment;
3. Neglect, carelessness or ignorance of a fellow workman;
4. Self-neglect, carelessness or ignorance.

Government that does not provide a fair degree of protection for the citizen does not fulfill the purpose of its existence, and such failure is culpable. The failure on the part of any person charged with the official management, supervision, inspection, or operation of certain work, machinery or men, to properly perform his duties, renders the corporation, company, owner, or employee liable for the results of such failure.

The law, however, distinguishes between the act or neglect of an official, for which the company is clearly liable, and that of a fellow workman, for the result of which it is generally held the employer is not responsible more than for accident due to one's own act or neglect.

What the commission will finally do with the report of its committee remains to be seen. An open session is announced to be held Jan. 14, 9:30 a.m., at which time the operators will be given a hearing. Following this, on the 15th, the miners will be heard. Little is to be expected, in the way of harmony, from these hearings. The commission will listen attentively to the presentation of each side; but to devise measures that will satisfy both parties and insure safety is a difficult problem.

One of the contemplated changes in the present law is the return to the previous system of appointing mine inspectors instead of electing them by popular vote, in each district, as has been the practice in the anthracite region since 1901. There can be no doubt, in any unprejudiced mind, that it is an unmitigated evil to expose any official whose duty is that of inspection to the caprices of a popular election. It is clear to the candid mind that such a law tends to develop an artful politician rather than a fearless inspector.

Let us get back once more to the principles of civil-service reform, and work to remove, as far as possible, the office of mine inspector from the influence and control of politics. Let us demand a high grade of intelligence, an ample mining experience and acquaintance with practical conditions in and out of the mine, and a character above reproach, of all candidates for this important office.

The qualifications we mention are rarely combined in man, and when found are not appreciated by contending parties at the polls. The strongest proof of qualification and fitness for office is efficient service, and no one knows better the character of the work performed by state inspectors than the highest state officer, who is ultimately responsible for their every act. This fact alone should recommend the appointive system to every member of the commission who seeks the best interests of mining.

COAL AGE will watch with interest the work of the commission, and will gladly voice the comments of contributors.

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Spontaneous Combustion Underground

Depth from the surface is not always a determining factor in the matter of underground mine fires. An example can be given of two collieries working at identical depths and having apparently similar conditions, fires occurring frequently in one case and being unknown in the other. It is clear, however, that if a seam is predisposed to spontaneous combustion, the greater the depth, the greater the danger. The grinding action of the roof will be increased and the natural temperature of the coal will be higher at 2700 ft. than at 2000 ft.

One experimenter recently took the temperature of the strata at a depth of 2660 ft. It was 93½ deg. F. This is exactly the temperature obtained by calculation, allowing a constant temperature of 50 deg. at a depth of 60 ft. and an increase of 1 deg. for every subsequent 60 ft. The British Royal Commission on Mines has fixed the greatest workable depth of coal at 4000 ft. The temperature in such a bed would be 114 degrees Fahrenheit.

DISCUSSION BY READERS

Cost of Mining Anthracite Coal

In the excellent article by Eli T. Conner, COAL AGE, Nov. 23, p. 708, he speaks of the propriety of including, in the cost of operation, the charge for coal consumed at the colliery, as is done at well managed bituminous mines. He further states that this is not done, to his knowledge, in the anthracite region.

While it may not appear in the cost sheets of any of the anthracite coal companies, yet it was once the custom with one of the then largest individual producers of anthracite coal, to always include this item in the costs, charging it up on the basis of the price of its cost at breaker. The effort was also made to use but the very small sizes, for local consumption; except in cases where locomotives, which used a larger size, were used, or in cases where there was not a sufficient amount of the smaller sizes made. In such cases the coal for the boilers was often transported from other near-by collieries where the coal was more brittle and small sizes were in excess of the requirements and brought a lesser figure in market. Mr. Conner is correct in stating that this fuel supply should be included, since these small sizes cost as much to produce, less the royalty, as the larger sizes that are sold to the trade. Moreover, no statement of the cost of operation is complete without this item of fuel.

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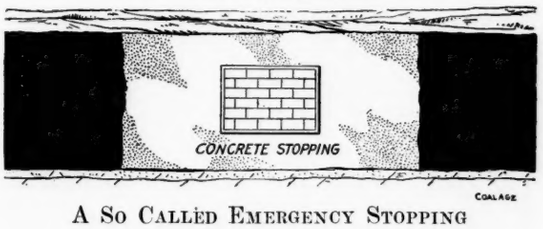
Emergency Stoppings—A Suggestion

Referring to the question of short-circuiting the air current in a coal mine, as suggested in the recent discussion of reversible fans, it occurred to me that the following suggestion of what might be called an emergency stopping would be of value, in this connection.

For some time past I have been building, at certain principal points in the mine, a stopping similar to that shown in the accompanying figure. The chief feature



A SO CALLED EMERGENCY STOPPING

in this stopping is that it contains a central opening from 2 to 3 ft. square, supported by a wooden frame, or pit rails may be used for this purpose. This opening is closed by brick masonry, which can be bumped out by a mine post, in case of need. By this means, the air can be quickly short-circuited without damaging the stopping. The main body of the stopping can be of concrete or of brick and masonry, as desired.

F. P. MANK,
Mine Foreman, Pittsburgh Coal Co.
Fair Haven, Penn.

Firing Shots by Electricity

In Coal Age, Dec. 14, p. 832, Geo. M. Brown described the conditions under which a violent explosion occurred Nov. 20, 1912, in mine No. 38 of the Rock Island Coal Co., at Alderson, Okla. An electric shotfiring system was in use at the mine, the shots being fired simultaneously, by throwing a switch at the surface when all was ready. The holes were charged and tamped by shotfirers, who also connected the wires. This was the second explosion, in this mine, since the electric shotfiring system was installed.

As the system of firing shots by electricity has been adopted at a number of mines in Oklahoma, the managers of these mines are naturally concerned to know whether this method of firing shots is particularly dangerous or or whether the explosions in Mine No. 38 were the result of local conditions.

The question is: Is it safer to fire all the shots in a mine, together or at one time as a single blast, than to fire the same shots singly, at fixed intervals? A definite answer to this question can only be given with the full knowledge of the conditions in each case. There are, however, certain general features pertaining to shotfiring that should be carefully considered before a final conclusion can be reached regarding the choice of methods in firing shots.

I have often stated that, in my judgment, the presence of a concentrated dust-carrying, return-air current acted upon by a shot's flame, is sure to start a dust explosion. If this be true, it appears that the margin of safety claimed for the method of firing shots singly may be much reduced or wiped out entirely through the absence of anything to prevent the concentration of a strong dust-laden, return current at the face where the shot is fired.

On the other hand, the firing of all the shots in a mine, at one time, may have some dangerous features that are absent in firing a single shot at a time. These dangers, however, may be minimized or eliminated altogether through the prevention of the draft concentration to which I have referred, toward one point. For example, if 100 shots are fired simultaneously their combined power to produce strong draft is, of course, much greater than the draft-producing power of a single shot; but the effect on each shot is very much less. My point is that if every one of the 100 shots fired simultaneously, produced an equal effect, the draft affecting each shot would be less than, say 10 per cent. of that which would be felt by any one of these shots fired singly. Should two or more of the 100 shots fired together develop more heat than the others the greater induced draft toward them would probably still be insufficient, under ordinary circumstances, to produce explosive results.

If then the division of dangerous draft can be considered a protective feature, it would seem that the more extensive the firing area and the greater the number of

shots fired at the same time, the less would be the amount of draft affecting each shot and the more remote the danger of an explosion. From Mr. Brown's statement it appears that, in the mine above mentioned, the shots were fired in sections and not simultaneously all over the mine. This method produced a strong concentration of draft into each section as it was fired; and this may have had considerable influence in starting the explosions.

Regarding the ventilation of mine No. 38, Mr. Brown states: "The ventilating fan is always stopped when the shots are fired, but in this particular mine the natural ventilation is strong. * * * * * I believe that the natural ventilation should be stopped to prevent fresh air from traveling along the entries while the shots are being fired." I share Mr. Brown's belief in this regard. It has been shown in several instances, where dual explosions had set coal or timbers on fire, that subsequent explosions occurred at short intervals and did not cease until the mine openings were sealed air-tight. If the closing of the mine openings prevented explosions in these cases, why not in others?

About a year ago I answered an inquiry asking for my views regarding the value of emergency doors at all the mine openings and in part I gave my opinion as follows: "I believe that, under certain conditions, the use of such doors will prove a great aid in the prevention of dust explosions." When I made that statement one of the conditions I had in mind was the simultaneous firing by electricity of all the shots in a mine. If such emergency doors are used they must be substantially built and be practically air-tight; and they must be rigidly fastened so that they cannot be opened by the force of reaction. This is essential to secure success. Explosions have occurred with the shafts partly blocked, they occurred with the shafts nearly sealed up, they ceased to occur after the sealing was complete.

If a theory is right, it is right all the way through. If the manager of a mine, where electricity is used in firing all the shots from the surface, believes that the admission of strong draft during shotfiring time is a menace and shows his belief by stopping the fan, why should he hesitate about closing the mine openings tight at firing time, especially in view of the fact that nobody's life is placed in danger thereby and that the doors need be kept closed only for a few minutes?

JOHN VERNER.

Chariton, Iowa.

Trolley Guards in Low Coal

I was interested in the inquiry of Robert J. McTaggart, COAL AGE, Dec. 7, p. 808, in regard to suitable protection for the trolley wire, in mines. I am familiar with the conditions in Mr. McTaggart's field, and, as our own conditions are similar, and we have experienced the same difficulty, I thought the following suggestion would be helpful.

In our mines we have adopted a system that I believe to be vastly superior, cheaper, and more convenient than anything so far described. The system is in use at our Carney mine, and has proved very satisfactory. Holes are drilled in the roof and 5/8-in. expansion bolts are used to support a stirrup, as shown in the accompanying Fig. 1. This stirrup is a piece of strap iron 1x3/8 in., bent so as to provide a 4-in. hook or hanger on each arm of the stirrup. The stirrup straddles the trolley wire without touching it, and supports 4-in. pieces of yellow pine, 1 in. thick and 14 ft. long.

These wooden strips form a sufficient guard for the protection of the trolley wire. They possess the advantage that they are easily put up or removed at any

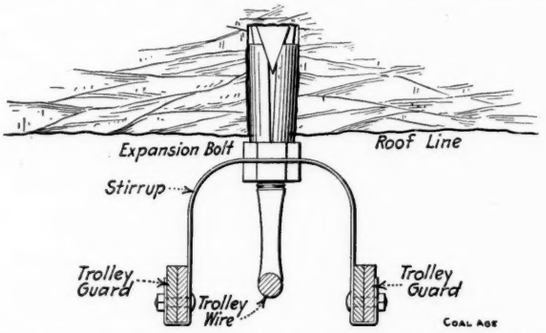


FIG. 1. SHOWING A SIMPLE FORM OF TROLLEY GUARD

time when desired. In our experience, we have found no nails or fastening of any kind necessary to hold the boards in place, although many prefer to bolt the strips to the stirrup, using a 1/2x3 1/2-in. bolt for this purpose.

THOMAS FISH.

Latrobe, Penn.

Another Letter—The swinging board forms what may be called a shield for the trolley wire and serves several purposes. It has the following advantages: It is easily installed and, because of its swinging motion, the board is not as easily broken or torn down by being struck by anything passing under it.

The cut shown, Fig. 2, explains clearly the manner of hanging the boards by means of drift bolts in the roof. The drift bolts are of the ordinary expansion type having a hook at the lower end of the bolt. The eye hasps are

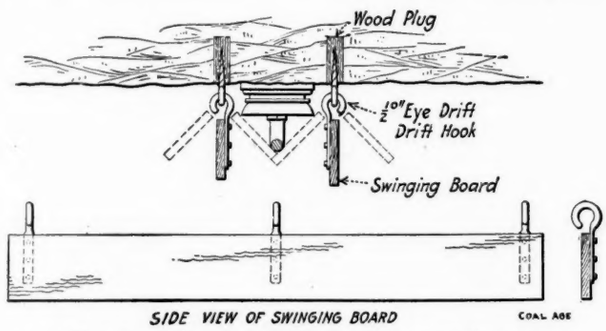


FIG. 2. A SWINGING BOARD TROLLEY GUARD

secured to the boards by 3/8x1 1/2-in. bolts, or they may be nailed firmly to the board. These hooks should be turned outward and at right angles to the trolley wire, while the eye of the hasp is parallel to the board or wire. The hooks are first placed in position in the roof and care must then be taken to space the hasps at the same distance apart on the board. The dotted lines, in the figure, show the position to which the board swings when struck by anything passing under it. For shielding the wire on curves, shorter lengths of boards can be used.

E. J. CHRISTY, Electrician,
The Troll Mining Company.

St. Clairsville, Ohio.

EXAMINATION QUESTIONS

Illinois Examination Questions

(*Answered by Request*)

Ques.—In what time can an engine of 40 effective horsepower pump 4000 cu.ft. of water from a depth of 360 ft.?

Ans.—The weight of water to be lifted is

$$4000 \times 62.5 = 250{,}000 \text{ lb.}$$

To lift this weight of water from a depth of 360 ft. will require

$$250{,}000 \times 360 = 90{,}000{,}000 \text{ ft.-lb.}$$

With 40 effective horsepower, there will be available to lift the water

$$40 \times 33{,}000 = 1{,}320{,}000 \text{ ft.-lb. per min.}$$

The time required to raise this water is then

$$\frac{90{,}000{,}000}{1{,}320{,}000} = 68.18 \text{ min.; or 1 hr., 8.18 min.}$$

Ques.—With a water gage of 0.4 in., a fan is making 80,000 r.p.m. and producing, at this speed, 35,000 cu.ft. of air per minute. What quantity of air will this fan produce, at the same speed, under a water gage of 0.8 in.?

Ans.—Assuming the efficiency of the fan remains unchanged, the power on the air will be the same for the same speed of the fan. The power on the air remaining constant, the volume of air in circulation varies inversely as the pressure per square foot. In other words, the volume ratio is equal to the inverse pressure ratio. Calling the required volume of air x

$$\frac{x}{35{,}000} = \frac{0.4}{0.8} = \frac{1}{2}$$

$$x = \frac{35{,}000}{2} = 17{,}500 \text{ cu.ft. per min.}$$

If the fan is properly designed, the efficiency of the ventilator will be increased, under the increased water gage; and, as a result, a larger proportion of the power becomes effective on the air and a less indicated horsepower of the engine is required to produce the same speed of the ventilator; but, for a *constant* power of the engine, the volume of air in circulation may be considerably increased under the increased water gage. It is difficult to tell what any particular fan will do, under these conditions, because so much depends on the type and construction of the fan and the speed for which the fan is designed.

Ques.—There is 10,000 cu.ft. of air passing on an airway, having a rubbing surface of 24,000 sq.ft. and a sectional area of 20 sq.ft.; what is the water gage producing this circulation?

Ans.—The unit of ventilating pressure, in this case, is

$$p = \frac{ksq^2}{a^3} = \frac{0.00000002 \times 24{,}000 \times 10{,}000^2}{20 \times 20 \times 20} = 6.0 \text{ lb.}$$

The water gage corresponding to this ventilating pressure is, then

$$w.g. = \frac{6.0}{5.2} = 1.15 \text{ in.}$$

Ques.—What horsepower will an engine exert when yielding 60 per cent. of duty (efficiency 60 per cent.) and circulating 100,000 cu.ft. of air per minute, under a water gage of one inch?

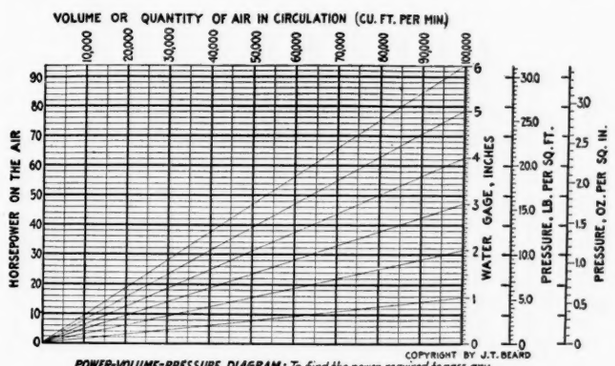
Ans.—The work performed, or the effective work per minute is

$$H = \frac{Qp}{33{,}000} = \frac{100{,}000 \times 1 \times 5.2}{33{,}000} = 15.75 \text{ hp.}$$

If the efficiency of the engine is 60 per cent., the indicated horsepower of the engine is

$$I.hp. = \frac{15.75}{0.60} = 26.25 \text{ hp.}$$

For the sake of illustration, we insert here a convenient diagram for finding the horsepower required to pass



POWER-VOLUME-PRESSURE DIAGRAM: *To find the power required to pass any given volume of air against any given pressure or water gage, follow the diagonal line corresponding to the given water gage to its intersection with the vertical line corresponding to the given volume and read this point of intersection on the power scale at the left of the diagram. For example, it requires 50 hp. to pass 80,000 cu. ft. of air per minute, under a 4-inch water gage or, reversing the order, 30 hp. will pass about 96,000 cu. ft. per minute under a 2-inch gage. Since the power is proportional to the quantity and pressure alike, in order to deal with higher values than those given in the diagram, it is only necessary to treat these as multiples of the values given in the diagram. Thus, 100 hp. would pass 160,000 cu. ft. under a 4-inch gage; or 320,000 cu. ft. under a 2-inch gage. The horsepower in this diagram is the power on the air, which is commonly, in fan practice, 60 per cent. of the horsepower of the engine or the i.hp.*

Coal Age

any quantity of air under any given water gage or pressure, expressed in pounds per square foot, or in ounces per square inch. In fan ventilation, the ventilating pressure is often expressed in ounces per square inch. The diagram needs no further explanation than what is given.

Ques.—A mine is producing 40,000 cu.ft. of air per minute, with 10 hp.; how many horsepower will be required to produce 60,000 cu.ft. per min., in this mine?

Ans.—The effective horsepower or the horsepower on the air varies as the cube of the quantity of air in circulation. In other words, the horsepower ratio is equal to the cube of the volume ratio. Therefore, calling the required effective horsepower, in this case, x

$$\frac{x}{10} = \left(\frac{60{,}000}{40{,}000}\right)^3 = \left(\frac{3}{2}\right)^3 = \frac{27}{8}$$

$$x = \frac{10 \times 27}{8} = 33.75 \text{ hp.}$$

This relation does not hold in regard to the indicated horsepower of the engine, since there is a change in the efficiency of the engine, as the speed of the fan is increased.

Chronology of Coal Mining in 1912*

JANUARY

Jan. 1—Virginia Iron, Coal & Coke Co. secured a $9,000,000 contract for furnishing locomotive fuel to the Boston & Maine R.R.

Jan. 4.—Meeting of the Western Federation of Miners at Denver, Colo.

Jan. 5—Shops and engine house at the drift mine of the Davis Coal & Coke Co., at Thomas, W. Va., destroyed by fire. Loss, $12,000.

Jan. 7—Portion of the plant of the Galloway Coal & Coke Co., Carbon Hill, Ala., destroyed by fire. Loss, $50,000.

Jan. 10—Committee appointed by Gov. Tener to revise and codify anthracite mining laws of Pennsylvania.

Jan. 15—U. S. Supreme Court rendered decision upholding an employers' liability act as constitutional.

Jan. 16—American Federation of Coal Operators permanently organized at Chicago. The 23d annual convention of United Mine Workers of America met at Indianapolis.

FEBRUARY

Feb. 2—Breaker and colliery building of the Connell Anthracite Coal Co., Bernice, Penn., destroyed by fire. Loss, $150,000.

Feb. 6—Boiler and engine houses of the North Breeze Coal Mining Co., Breeze, Ill., destroyed by fire. Loss, $50,000.

Feb. 18—Plant of the Knickerbocker Briquette Co., Murphysboro, Ill., destroyed by fire. Loss, $100,000.

Feb. 22—Fire in No. 5 mine of the Western Coal & Mining Co., Lehigh, Okla., resulted in the death of eight men.

Feb. 29—Over 1,000,000 coal miners in Great Britain went out on strike for a minimum wage.

MARCH

Mar. 13—Anthracite operators formally rejected mine workers' demands.

Mar. 15—Officials of the United Mine Workers refused counter proposition of the anthracite operators.

Mar. 19—Interstate Commerce Commission ordered a 10c. reduction on the Pittsburgh-Lake freight rate.

Mar. 20—Conference between bituminous operators and miners opened in Cleveland, Ohio.

Mar. 29—Compromise agreement effected between bituminous operators and miners in conference at Cleveland.—Supervision of work in anthracite mines of Pennsylvania was ordered by offinials of United Mine Workers.—Bill providing minimum wage for miners became a law in Great Britain.

APRIL

Apr. 2—Complete suspension of work at anthracite mines of Pennsylvania, and at a large percentage of bituminous mines in central competitive field.

Apr. 6—Coal strike in Great Britain officially declared at an end.

Apr. 10—Bituminous miners ratified Cleveland wage scale agreement.—Conference of anthracite operators and miners opened in Philadelphia.

Apr. 18—Fifty thousand miners in Pittsburgh district returned to work.

Apr. 20—Central Pennsylvania miners and operators agreed on a two-year contract.

Apr. 25—Two-year bituminous wage scale contract formally signed at Indianapolis.

MAY

May 1—Wage scale agreement reached in Kanawha field of West Virginia.

May 2—Representative of anthracite miners refused to accept agreement reached by subcommittee of miners and operators, Apr. 25.

May 6-11—Serious rioting in various parts of anthracite field.

May 7—Illinois miners voted to accept wage scale and returned to work. Contract signed May 17.

May 11—Miners of western Kentucky voted to return to work, pending arbitration over wage scale.

May 15—Wage scale agreement for Hocking district, Ohio, signed.

May 18—Convention of anthracite miners voted to accept agreement of Apr. 25. Contract signed, May 20; general resumption of work, May 22.

May 29—Iowa miners voted to accept proposed agreement and return to work.

May 30—Wage scale contract signed for Missouri, Kansas, Oklahoma and Arkansas.

May 31—Wage scale contract signed for bituminous field of Indiana.—Miners attacked guards in Paint Creek district, W. Va.

JUNE

June 1—Striking miners evicted from company houses of Great Lakes Coal Co.

June 3—Miners on strike in Terre Haute section, Indiana, returned to work.

June 10—Wage scale agreement between operators and miners of Pomeroy Bend, Ohio, signed.

June 21—Interstate Commerce Commission denied further reductions on bituminous coal from Pittsburgh district to Great Lakes.

June 28—Fire at Twin shaft, Pittston, Penn.

JULY

July 1—Attorneys representing miners of Paint Creek district asked court for injunction to restrain coal operators from maintaining guard system.

July 8—Majority of mines of the Spadra anthracite coal field, Arkansas, started up.

July 23—Union mine of Sullivan, Ind., idle during miners' strike, resumed work.

July 25—Continental Coal Corporation opened up five new mines at Wallsend, Ky.

AUGUST

Aug. 1—Extension of the Western Maryland R.R. to Connellsville, Penn., put in operation.

Aug. 7—Girard colliery at Ravens Run, Penn., destroyed by fire. Loss, $175,000.

Aug. 9—Fifteen hundred more miners went on strike in Kanawha field, W. Va.

Aug. 12—Western Allegheny R.R. Co. placed in hands of receiver.

SEPTEMBER

Sept. 12—Experimental mine explosions conducted at Bruceton, Penn.

Sept. 20—Eight thousand men went on strike at Pottsville, Penn.

Sept 25—Several small railroads in southwestern Pennsylvania consolidated with the Baltimore & Ohio R.R.

OCTOBER

Oct. 12—Forty-five perished in fire in North Mount Lyell mines, caused by blowing out of a motor fuse.

Oct. 25—Strike in Kanawha field spreads to Solvay Collieries Co., Kingston, W. Va.

Oct. 26—First anual field day of Tenn. Soc. Mine Foremen.

Oct. 29—Celebration of John Mitchell Day in anthracite region.

NOVEMBER

Nov. 2—One thousand miners employed at the No. 5 mine of the Lehigh and Wilkes-Barre Coal Co., went out on strike owing to the employment by the company of nonunion men.

Nov. 11—Mines of Lawrence County, Ohio, terminate a two-year strike and men return to work.

Nov. 13—First meeting of the Rocky Mountain Coal Mining Institute, Denver, Colo.

Nov. 16—Martial law again proclaimed in Paint Creek district.

DECEMBER

Dec. 9—December meeting of the Kentucky Mining Institute held at Lexington, Ky.

Dec. 10-11—Winter meeting of the West Virginia Mining Institute, at Parkersburg, W. Va.

Dec. 13—Remainder of troops withdrawn from West Virginia strike zone.

Dec. 18-19—Meeting of Coal Mining Institute of America at Pittsburgh, Penn.

*Accidents and explosions have been omitted.

COAL AND COKE NEWS

Washington, D. C.

Prof. Emory R. Johnson, of the Isthmian Canal Commission, in a statement this week concerning the effect of the Panama Canal on the cost of shipping coal, says that attention should be called to the fact that in trading with Pacific countries the fuel expenses of steamers engaged in the commerce of the eastern United States would be less than the expenses of steamers operated over routes between Europe and Pacific countries.

The cost of coal at Panama would be at least $1 per ton less than at Mediterranean ports and at the Suez Canal, according to his estimate, and the coal at stations along the Eastern seaboard of the United States would be fully $1 per ton less than at European stations. Relative fuel expenses via the Panama and Suez routes will work to the advantage of the Panama Canal and of the commerce of the United States carried on through that canal with Pacific countries in competition with the commerce of Europe carried through the Suez Canal to the Orient and Australia.

In considering the relation of the canal to the development of American trade, factors other than transportation facilities should receive careful attention. In fact, transportation costs and facilities, though of great importance, are only one influence affecting the volume and direction of international trade.

Professor Johnson's analysis of the situation at Panama is being read with great interest by members of Congress who have concerned themselves with the competitive side of canal operation.

A DECISION OF THE INTERSTATE COMMERCE COMMISSION

The Interstate Commerce Commission has rendered a decision in the case of the Thomas W. Gilmore Co. vs. the Chicago & Northwestern R.R. Co. This case related to carload shipments of bituminous coal to the complainants at Rose Hill, Ill., the freight charge being 20c. per net ton in excess of the charge for similar transportation to Ravenswood, Ill., a point in the Chicago switching district. On anthracite coal the charge to Rose Hill is 10c. per ton greater than to Ravenswood.

It was held that this rate situation subjects the complainants to unjust discrimination and Rose Hill to undue prejudice and disadvantage, and the differential was reduced on interstate shipments to not over 5c. per ton on coal in carload lots to Rose Hill—such 5c. to be in excess of the charge for similar transportation to Ravenswood. The decision is of some interest as an incident in the general rate controversy between anthracite and bituminous shippers.

ANTHRACITE PRODUCTION DECLINES IN 1912

According to data compiled by the government, all records for the production of coal in the United States were beaten in 1912, taking hard and soft coal together, although the production of hard coal alone fell below that of many previous years. It appears that taking the figures up to the beginning of December (those for that month not being yet available), and assuming that the month's shipments were the same as in December of last year, the total tonnage of anthracite for the year 1912 will amount to 63,781,503 tons—a smaller tonnage than for any year in the last six except 1909, when the shipments were 61,909,885 tons.

Omitting the quantity sold to the local trade and to employees, which may be estimated at about 3% of the total shipments, it would appear that the total marketable output of anthracite in 1912 was 65,694,948 tons, as compared with 72,000,000 in 1911. This does not include the coal used in the operation of the mines themselves.

Suspension of work for about seven weeks last spring is accepted as the cause for the falling off in output. The idleness of the mines during the period in question caused a loss of about 11,000,000 tons, but after the suspension, the mines were operated on a full-time basis in the attempt to make up some of this deficiency. This cut the deficit of 11,000,000 tons down to about 6,000,000.

Retail prices, it is reported, have been maintained at the regular figures by the larger companies, but premiums of from 50c. to about $1.50 per ton have been paid up to the first of January for independent coal. It is believed that the closing of navigation on the Great Lakes will now concentrate shipments in the Eastern markets, so that there will be an ample supply of coal for all consumers during the coming winter.

PENNSYLVANIA

Anthracite

Centralia—The strike, which was declared here because mine officials discharged several union men who refused to work over-time, ended Dec. 30. Fifteen hundred employees have returned to work after an idleness of two weeks.

Wilkes-Barre—Thomas Kennedy, president of the anthracite mine district No. 1., has served notice that the union miners throughout Pennsylvania would fight the proposed changes in the mining laws which are expected to come up at the coming Legislature.

On Dec. 27, miners from all parts of the anthracite region formed a meeting of the State Mine Code Commission to show their contempt for the proposed changes in the mining code. Mine leaders have brought delegations to fight against allowing the Governor to name mine inspectors instead of letting people elect them.

Four hundred employees of the Dodson No. 12 colliery of the Plymouth Coal Co. have been thrown out of employment as a result of a fire which started two weeks ago in the west plane of the Red Ash vein. The flames still remain unextinguished, although excellent headway is being made by those who are fighting the fire. Until they have been subdued, the colliery will remain idle.

The walling in of the fire in the Kidney vein of the Parrish Coal Co. is progressing so rapidly that it is expected that the 500 men thrown out of employment as a result of this fire will be back on the job in a short time.

Reading—Fire which burns stubbornly at Mt. Carmel, and which has hampered the fire fighters in their efforts to battle with the flames has destroyed about $20,000 worth of property.

Scranton—The breaker boys and a number of the outside hands at the Capouse colliery of the Scranton Coal Co. in Keyser Valley, went on strike because of the refusal of a half-dozen men and boys employed about the breaker to join the miners' union. The colliery was closed down for the day, when the boys left the chutes, laying about eight hundred men idle for the day. Within an hour after the strike had been called, the non-union men had agreed to join the union, but by that time the boys had scattered, and no attempt was made to resume work for the day.

Tamaqua—Eight of the nine miners entombed behind a barrier of coal and rock in the East Lehigh colliery for forty hours, were rescued alive standing in 4 ft. of water. One of their number had met death by drowning, and his remains were discovered soon after the rescue of the others.

Bituminous

Charleroi—The Union Supply Co. distributed more than 50,000 presents among the thousands of youngsters about the coke plants of the Connellsville region on Christmas day. Not only were the youngsters taken care of, but the poor and needy were also remembered in a suitable way.

Williamsport—Soft coal miners from central and western Pennsylvania have appeared before a committee of the Legislature and presented four bills which they would like to have enacted. One bill provides that a man has to serve two years in the capacity of laborer before being granted a certificate. This is similar to the law governing anthracite mining. Another bill prohibits electricity in gaseous mines. The third is directed against the use of machines with which to rob pillars, and the fourth has to do with certain age limits.

Pittsburgh—Director J. A. Holmes, of the United States Bureau of Mines, is quoted as saying that Pittsburgh is the proper place for the mine testing station and that he would be sorry to see it removed.

WEST VIRGINIA

Charleston—It is reported that the situation in the strike zone on Paint and Cabin Creek is again growing threatening. Outbreaks on the part of striking miners would cause little surprise at any time. The fact that no proclamation lifting martial law was issued when the troops were withdrawn two weeks ago leads many to believe that martial law is still in effect.

Notwithstanding the labor troubles in the Kanawha coal field during the greater part of the year, the coal production of West Virginia for 1912 far exceeded that of any other year. This is a statement issued Dec. 30 by Edward W. Parsons, coal statistician of the Geological Survey. The total production in the state for the year ending June 30, 1912, is reported as 66,731,587 tons.

OHIO

Columbus—A decision in the case of the Government against various railroad and coal companies handed down Dec. 30, which declares the companies guilty of restraint of trade in violation of the Sherman law, makes imperative the sale of 100,000 acres of coal land now owned by the roads involved and the Sunday Creek Coal Co., together with stock in other railroads by which the alleged monopoly was formed.

The decision further orders that the joint ownership of the Kanawha & Michigan by the Chesapeake & Ohio and the Lake Shore & Michigan Southern must be terminated.

Flushing—An explosion in the Lafferty mine of the Pittsburgh & Belmont Coal Co., near Morristown, Dec. 31, resulted in the death of one man and the serious burning of another.

INDIANA

Clifton—Deering Mine No. 1., where an explosion occurred nearly two years ago, costing the lives of two shot-firers and damaging the property, has resumed work. A new system of shot-firing, calculated to make the work safer, has been adopted. More time will be demanded of the men firing the shots. The first coal loaded out was two cars which was left from the firing of the two men who were killed.

ILLINOIS

Springfield—The governor of Illinois has appointed as members of the Illinois Mine Rescue Station Commission, Thomas Moses, General Superintendent of the Bunsen Coal Co. as one of the operators in place of the late W. W. Taylor, and J. M. Zimmerman, representing the United Mine Workers of America, in place of Charles Krallman, recently resigned.

The following members have been appointed on the Mining Investigation Commission: H. H. Stoek, J. A. Holmes, J. E. Williams, Richard Newsam, G. W. Traer, Thos. Jeremiah, Benj. Williams, Geo. McArtor, Wm. Hall.

This commission was authorized by the last session of the Illinois Legislature and was given power and authority to investigate methods and conditions of mining coal throughout the state with special reference to the safety of human lives and property, and the conservation of the coal deposits.

UTAH

Salt Lake City—Word has reached here of the discovery of quite a bed of anthracite coal in the southern part of Utah, near Cedar City.

The existence of coal in this locality has been known for some time, but it fell to the present prospectors to determine the quality and extent of the deposit.

Of late a large amount of work has been done, the main portion being confined to what is known as Tunnel No. 3. This tunnel has been cleaned out and extended until it is now approximately 180 ft. in length. It has been timbered the entire length and is in good condition.

This tunnel encountered five veins of coal, vein No. 2 measuring 18 in. of pure semi-anthracite, vein No. 3 has 4 ft. of the same quality, while veins Nos. 4 and 5 have a minimum of 5 ft. of the best kind of fuel.

If further investigation confirms the report that the coal is semi-anthracite, there is no doubt but that a ready market can be had in Utah and California. The field is located to the east of the San Pedro, Los Angeles & Salt Lake R.R., and it would be necessary to build a spur in order to open up the deposit.

At present the anthracite consumers are supplied by the Pennsylvania and Colorado mines and a good development in the intermountain territory would be welcomed and no doubt would draw its share of the trade. Such a development should also be able to successfully meet any price competition.

PERSONALS

President Walker of the Illinois section of the United Mine Workers has been selected to represent the American Federation of Labor at the British Trade Congress.

Burke H. Keeny has been appointed Western manager of the Bewley-Darst Coal Co., Bristol, Tenn., with offices at 505 Neave Building, Cincinnati, Ohio. He will thus be enabled to handle the business of the company in the states of Kentucky, Ohio, Indiana, Michigan and the West.

OBITUARY

James M. Laing, aged 43, was instantly killed at Berlin, on Cabin Creek, West Virginia, by a runaway car on an incline. Mr. Laing is a wealthy coal operator in the New River, Kanawha and Elk River districts, and is the brother of John Laing head of the state department of mines. He is survived by a wife and children.

TRADE CATALOGS

Publicity Magazine; devoted to the interests of the Jones Stoker. February, 1912. The Underfeed Stoker Co. of America, Chicago, Ill.

Rescue and Recovery. Bulletin of a few cases where "Proto" (Fleuss-Davis' patent) breathing apparatus has been used in England. Seibe, Gorman & Co., Ltd., London, S. E. H. N. Elmer, Monadnock Block, Chicago, general agent for North America.

Condensed Catalogue and supplement of mine and industrial electric supplies; Electric Service Supplies Co., Philadelphia, New York and Chicago. Showing new and improved devices and revised listings pertaining to material covered by general catalogue No. 4, Vol. 3 of mine and industrial supplies.

RECENT COAL AND COKE PATENTS

Bucket Conveyor. A. T. Perkins, Chicago, Ill. 1,040,005, Oct. 1, 1912. Filed June 18, 1909. Serial No. 502,882.

Gas Producer. W. Climie, Bo'ness, Scotland. 1,040,148, Oct. 1, 1912. Filed Sept. 13, 1911. Serial No. 649,002.

Hoisting Apparatus. J. W. Hammond and J. F. Donahue, assignors to Mead Morrison Mfg. Co., Cambridge, Mass. 1,039,733, Oct. 1, 1912. Filed Nov. 8, 1907. Serial No. 401,264.

Miner's Combination Tamping Tool. L. and A. W. Shaffer, Duryea, Penn. 1,040,037, Oct. 1, 1912. Filed Oct. 4, 1911. Serial No. 652,885.

BOOK REVIEW

CARBONIZATION OF COAL: A Scientific Review of the Formation, Composition and Destructive Distillation of Coal for Gas, Coke and Byproducts. By Vivian B. Lewes, professor of chemistry, Royal Naval College, Greenwich; 315 pp., 5½x8½, 27 ill. John Allan & Co., 8 Bouverie St., E. C. Clothboards, 7s. 6d.

This book is a reprint with considerable modification of Mr. Lewes' interesting Cantor Lectures delivered in the winter of 1911 before the Royal Society of Arts. Much of the introductory part we have published in its original form. We have also made frequent reference to it editorially, and found it necessary to dissent from some of the conclusions reached.

Mr. Lewes frankly says "Many of my views will not, I fear, be acceptable to all my readers." We cheerfully acknowledge that whether intended for us or not, it describes us to a nicety, for, to many other things we may yet take

editorial exception. But it is not an inferior book which we have to review, or it would not arouse our fighting spirit.

We are afraid that the clippings we have made from the Cantor lectures will give a false impression of the present work. Much is purely chemical, it is true, but a description of present and past coke ovens and gas retorts together fill 50 pages and in these occur most of the illustrations.

There are several pages on tar, its formation, use, and decomposition, some on coke, the nitrogen and sulphur of coal and their recovery, and a concluding chapter on modern coal gas. Every manager and engineer today should be preparing himself for the rapid introduction of byproduct ovens and for the technical skill that introduction will involve.

We are sure that all such far-sighted men will want to read this inquiry into the carbonization of coal. The reader may frequently bristle with dissent, but he will be interested, for the book is by no means dull and we owe a debt to Mr. Lewes for his willingness to propound theories which are sure to arouse dissent.

A common English fault is that of writing long sentences, which turn the reader from an analysis of the thought to a consideration of the grammatical structure. It is strange that in the land of Tyndall, there are so many offenders. We formerly classed V. B. Lewes among them, but a disintegrator seems to have gone to work at his sentences and broken them up into "prepared sizes." As a result our anticipated criticism is almost entirely disarmed.

CONSTRUCTION NEWS

Monongahela, Penn.—It is said the new plans for the improvement of Mongah mine embrace among other things a new main entry, which will be much lower than the present opening.

Duluth, Minn.—The Lehigh Valley Coal Co. is tearing down parts of a coal dock structure built several years ago at its Tower Slip plant in order to make room for modern improvements. It is understood that the present coal dock will be converted into a hard coal storage plant.

Birmingham, Ala.—The Pratt Consolidated Coal Co., one of the largest coal concerns in the southern field, has just awarded a contract to the Roberts & Schaefer Co., for the designing and building of a complete 1000-ton Stewart coal washing plant, storage bins, and steel tipple to replace the structures recently burned at their mines at Banner, Alabama. Approximate contract price $60,000.

NEW INCORPORATIONS

Portsmouth, Ohio—The Cliff Coal Co.; increase from $30,000 to $40,000.

Indianapolis, Ind.—The Pan Handle Consolidated Coal Co. has dissolved.

Peoria, Ill.—The Eastern Coal Co.; number of directors decreased from 5 to 3.

Boonville, Ind.—The Wilson-White Coal Co. has changed its name to Cypress Creek Coal Co.

Wilmington, Del.—The Electric Coal Co.; to do a general coal business; capital stock, $100,000.

Indianapolis, Ind.—The Terhune Coal & Mining Co. and the Central Coal & Mining Co. have been dissolved.

Louisville, Ky.—The Low Ash Coal Co.; capital stock, $25,000. Incorporators, C. R. Hunt, E. N. King, W. O. Alden.

Danville, Ill.—The Beech Flats Coal Co.; capital stock, $100,000. Incorporators, W. G. Hartshorn, Grant Holmes, C. J. White.

Ashland, Ky.—The Big Sandy Fuel Co.; capital stock, $10,000. Incorporators, Ralph Chatfield, V. M. Chatfield, O. P. Chatfield.

Pittsburgh, Penn.—The Fieschter Coal Co.; capital, $200. Incorporators, Alfred Fieschter, Roca Fieschter and Paul Fieschter.

Nokomis, Ill.—The Fayette County Coal Co. has been organized and will take up at once 32,000 acres of coal in this county.

New York, N. Y.—The Carter Coal Co.; capital $5,000,000. Incorporators G. L. Carter, S. R. Jennings, J. C. Stone, Johnston City, Tenn.

Ottawa, Canada—The Canadian Gazette announces the incorporation of the London Land & Coal Co., of London, Ont., capital $2,000,000.

Wilmington, Del.—Bronx Mining Co.; capital stock, $325,000. Incorporators, J. M. Frere, Jos. Zurita and C. L. Hearn, Wilmington, Del.

Astoria, Ill.—The Astoria & Woodland Coal Co.; name changed to the Eclipse Coal Mine and capital stock decreased from $2400 to $1200.

Elmore, W. Va.—Mead Pocahontas Coal Co.; authorized capital, $60,000. Dr. J. A. Wood, J. Edward Cox, J. C. Sullivan, W. G. Hubbard and E. H. Mead.

Tice, Ill.—The Coal Bank Mining Co.; capital stock, $1000; mining and marketing coal. Incorporators, J. P. Grosbill, H. V. Nelson, Mrs. M. N. Grosbill.

Mullens, W. Va.—Trace Fork Coal Co.; authorized capital, $75,000 Thos. F. Bailey, Jr., J. C. Sullivan, W. G. Hubbard, K. S. McClanahan and E. F. Hoover.

Queens, N. Y.—Home Coal Co., Inc., real estate, etc.; capital, $25,000. Incorporators are H. A. Beiler, H. W. Hach, Richmond Hill; J. C. Garbe, Woodhaven.

Montgomery, Ala.—Red Eagle Coal Co. filed articles of incorporation. Capital $50,000. The home offices of the company will be located at Blocton in Bibb County.

Portland, Me.—Jaulin Alaska Mines Co.; capital $2,000,000. Promoters, Albert F. Jones, T. L. Croteau, Albert A. Richards, B. M. Maxwell, N. B. Farnham, Portland, Me.

Manhattan, N. Y.—Alaska Kougarok Co., Inc.; mines and mining rights; $200,000. Howard I. Seney, William Kennelly, Felix Valdes, 237 Lexington Avenue, Manhattan, N. Y.

Grafton, W. Va.—The Preston Fuel Co.; capital stock, $300,000. Incorporators, Buckner Clay, G. E. Price, R. M. Price, A. C. Collins, R. S. Spillman, all of Charleston.

Clearfield, Penn.—An application will be made Jan. 14 to the Governor of Pennsylvania for a charter for an intended corporation to be called the Nevling Coal Mining Co.

Tallula, Ill.—The Menard County Coal & Mining Co.; capital stock, $20,000; to mine coal, manufacture ice and deal in both. Incorporators, T. A. Tomlin, John Schome, S. O. Savage.

McAlester, Okla.—The Lane Coal Co.; capital stock, $50,000. Incorporators, S. W. Lane, Wewoka; W. J. Baber, J. Fred Miles, Tulsa; A. L. Latimer, McAlester; W. C. Ellis, Fort Worth.

Philadelphia, Penn.—Application will be made, Dec. 30, by James J. Reilly, Harold A. Schumann and L. E. Marter, for the charter of an intended corporation to be called the Schumann Coal Co.

Scranton, Penn.—Application will be made Jan. 13, 1913, by John R. Williams, Joseph W. Noble and William H. Jessup for the charter of an intended corporation to be called the Noble Williams Coal Co.

Columbus, Ohio—The Red Ash Pocahontas Coal Co.; capital stock of $10,000; to mine and deal in coal. Incorporators, W. H. Plant, Ethel M. Plant, P. W. Barricklow, Margaret M. Barricklow and E. W. Parker.

Cleveland, Ohio—The Pennington Mining Co.; capital stock, $100,000; mining and dealing in iron ore and coal. Incorporators, J. C. Merrick, G. W. Cottrell, C. C. Roads, F. W. Dellenbarger and Henry G. Dodge.

Waukegan, Ill.—The Waukegan Lumber & Coal Co.; capital stock, $35,000; to deal in lumber, coal and building materials. Incorporators, T. G. McGay, W. O. McKinney, Alexander Whan, D. Q. Hart and J. D. Pope.

Scranton, Penn.—Application will be made Jan. 21 by Archibald B. Mahon, James A. Waddell, Jno. Coyle, W. J. Welbasky and T. Ellsworth Davies for the charter of the Mining Engineering Co., of Pennsylvania. Frederic W. Fleitz, solicitor.

Altus, Okla.—A number of men of this vicinity have organized a coöperative coal company and have a mine at Blanco, south of McAlester. The name of the new company is the Tolleson Coal Co. Dr. E. A. Aberthnay is the sales director.

Pittsburgh, Penn.—The Buffalo Creek Coal & Brick Co.; capital $250,000; to purchase, take lease, hold, own and deal in coal and minerals of all kinds. Incorporators Charles A. Smith, Pittsburgh, Penn., R. Duranteer, McDonald, Penn., C. E. Meyer, Ingram, Penn.

Columbus, Ohio—The Taylor-Williams Coal Co.; capital stock of $25,000; to mine and sell coal. Incorporators, John W. Moore, S. E. Ranney, John M. Taylor, E. E. Learned and W. E. Runyan. The concern is the incorporation of a partnership which was conducted under the same name.

Florence, Colo.—The Rex Coal Mining & Mfg. Co. has filed papers of incorporation with the secretary of state for the purpose of taking over the coal mine formerly operated by the Rex Coal Co. and located on Newlin Creek. Incorporators, G. F. Stevens, M. Collins, Denver; R. M. Ramsay, A. M. Smith and E. R. Harris, Florence. It is the intention of the company to equip the mine with new and uptodate machinery as well as to provide transportation facilities for hauling the coal to market.

The company owns 160 acres of land which is underlaid by a number of excellent seams of bituminous coal.

INDUSTRIAL NEWS

Danville, Ill.—The new coal shaft belonging to Frank Woodard has been completed, and miners have begun to take out coal for the country trade.

Philadelphia, Penn.—The Pennsylvania R.R., transported 6,097,290 tons of coal and coke in November, an increase of 136,152 tons over October.

St. Clairsville, Ohio—When the total production for Belmont County for the year 1912 has been compiled it is expected that the figures will reach the 10,000,000-ton mark.

Philadelphia, Penn.—The output of the Consolidation Coal Co., for the year up to Dec. 24 aggregated 10,200,000 tons. This was an increase of 1,125,000 tons over last year.

Hazelton, Penn.—The Lehigh Valley Coal Co. took advantage of the snowstorm Dec. 27 to burn the abandoned Yorktown breaker. The structure has been replaced by a modern washery.

Newcastle, Ala.—About 250 ovens will be fired up at once by the Pratt Consolidated Coal Co. for the purpose of filling a 40,000-ton order to be delivered in the next six months. These ovens have been idle for the past 3 years.

Oak Crest, Colo.—George Campion, of Los Angeles and T. L. Darby of Denver, have been making investigations into the coal lands on Trout Creek. It is understood that arrangements will soon be made for the development of the land.

Pineville, Ky.—Two hundred coke ovens which have been idle at Straight Creek for years are being put in repair by the Continental Coke Corporation and will be operated at their full capacity. Thirty-three ovens were fired as a starter and their first coke was pulled.

Uniontown, Penn.—A tract of 655 acres of coal land in Greene County, Penn. and Wetzel County, W. Va., was sold Dec. 31 to a company of Connellsville men. The purchase price was $100 an acre. Operations will be begun at once for the development of the land.

Forrell, Penn.—The record output of coal in Mercer County in one day was broken by mine No. 7 of the Mercer Coal & Iron Co. at Stoneboro, Dec. 23, when the output for 9 hours was 1600 tons. The individual record was broken by Joseph Shasser who loaded 35 tons of coal in 8 hours.

Greensburg, Penn.—The Yukon Coal zone is developing rapidly at present. Harry Whyel Coke Co. made several purchases of coal in Sewickley township. This company now owns coal lands valued at over $100,000. A modern coal mine was constructed some time ago and the mines are running very well.

Butler, Penn.—The mines of the Great Lakes Coal Co. which have been shut down since April 1, resumed operations Jan. 2. The mines have been leased to the C. P. Munsch Coal Co. of DuBois. The Great Lakes Company had 23,000 acres of land in the Kaylor district and the plant is considered to be excellent.

Brownsville, Penn.—It is rumored that the Allicia Coal & Coke Co. is making arrangements to start operations with 200 new coke ovens, on the Fayette County side of the Monongahela River. On the Washington County side the Reliance Coal & Coke Co. is erecting 500 ovens in anticipation of a heavy coke trade.

Grand Forks, N. D.—The report of the state engineer to Governor Burke shows that there are 105 mines in operation in North Dakota, employing 2000 men. The beds of coal vary from 3 to 19 ft. in thickness and occur at depths of from 5 to 200 ft. Where the overburden is light the coal is mined by stripping.

Trinidad, Colo.—J. A. and W. H. Hardenbrook have leased the Sugar Loaf mine from P. N. Bissell, and are at work taking out some of the best coal it has produced.

J. R. Coleman, who broke into the coal business a month ago, has taken hold of the Gibbs mine and has a force of miners busy at that branch.

Hillery, Ill.—According to an unconfirmed report among the miners, another large tract of coal has been purchased near here, and a new shaft will be sunk within a short time. The Indiana Harbor Ry. Co., is said to be back of the deal and will likely put in a spur track on the northern limits of the town as soon as the mine is sunk. It is stated that the company has purchased all the mineral rights on the land in question.

Shelbyville, Ill.—It seems probable that 35,000 acres of coal land in the eastern part of Williamson County will soon change hands. This is the tract which was optioned this summer by Willard Heath, of St. Louis. After optioning the land, Heath's representative left and nothing more was heard from him until this week, when owners of the land received letters asking them at once to have abstracts made and ready for the deal to be closed.

Chattanooga, Tenn.—The Chattanooga Estates Co., which owns and is developing between 20,000 and 30,000 acres of coal and timber land on the north side of the Tennessee River, announces that it will operate freight scows by means of a tug from its property to inclines connecting with all roads leading into Chattanooga.

The work on one incline is already under way and as soon as it is completed others will be commenced. Three barges will be used and one tug.

Morgantown, Penn.—New machinery has been installed at the Rock Forge plant of the Connellsville Basin Coal & Coke Co., which has been shut down for more than a year, and the whole plant has been given a general and thorough overhauling. At present a double force of mechanics are at work putting in a new set of boilers. The ovens are being fired as fast as the coal can be supplied.

The company is short of men, but the force is being increased as rapidly as workmen can be secured.

Pittsburgh, Penn.—The Toledo & Ohio Central, which is controlled by the Lake Shore, an integral part of the New York Central Lines, is planning to compete with the Hocking Valley, owned by the Chesapeake & Ohio, in transporting coal from the West Virginia and Kentucky lines through the Toledo gateway, and has plans drawn up for new docks at Toledo.

When the docks are well under way the road will probably doubletrack its line from Toledo to Columbus.

Baltimore, Md.—It is rumored that plans are now on foot for the consolidation of the Durham Coal & Iron Co., and several other companies, representing between $12,000,000 and $15,000,000 capital. This will be one of the largest coal mergers ever put through in the South. It is said that C. H. Smith, vice-president and general manager of the Durham Company, is slated for the presidency of the new concern. Arrangements are being made to acquire about 20,000 additional acres of coal land. Extensive improvements will be made.

Birmingham, Ala.—All indications are that the Sayreton mine, operated by the Republic Company, will have the largest output in Alabama. The production of this mine is expected to exceed 360,000 tons. No. 3 mine of the Tennessee company at Ensley is expected to rank second, while the Republic mine No. 2 will probably stand third.

Other mines ranking high in the list are the Flat Top and Banner mines of the Pratt Consolidated Coal Co., and the Acmar and Margaret mines of the Alabama Fuel & Steel Co.

Steamboat Springs, Colo.—The financing of the Moffat road and the awakened interest of Denver people throughout the commercial bodies have turned the attention of the large coal interests toward Routt County.

Last week Geo. Morrison, superintendent of the Routt County Fuel Co., and John McNeill, consulting engineer of one of the largest coal using concerns in America, spent three days with Sam Adams, making a surface examination along the outcropping of the coal measures from Oak Creek through Twenty Mile Park, and as far west as the Wage and Lenox mines.

Washington, Penn.—The development of a large block of virgin coal south of Washington is believed to be assured by the closing of a deal Dec. 31, for the transfer of 2500 acres to a representative of a syndicate of Pittsburgh men The amount involved exceeds $500,000.

It is also known that William Smith has sold 100 acres of coal and surface land east of Washington on the Baltimore & Ohio R.R. to D. L. Williams, W. S. Lockhart and Robert Young of McDonald, Penn. It is understood that the purchasers will co-operate with the Pittsburgh men in the development of the property. The price paid has not been made public.

COAL TRADE REVIEWS

GENERAL REVIEW

The open weather and consequent light demand for the domestic grades has undoubtedly proved the salvation of the anthracite trade so far this season. The situation continues to become a trifle easier each week, and while arrivals are not heavy and are going into consumption as promptly as received, it is noticeable that the consumer is not obliged to wait so long for delivery. The warm weather has undoubtedly developed a feeling of uncertainty in the market, and orders are fluctuating, but the independents are still commanding a fair premium for their product. In the Coastwise trade the storm of Jan. 3 and 4 resulted in light receipts and high retail prices are still being maintained.

The Eastern bituminous market is firm with buying on a large scale, stocks rather uneven, and demand fluctuating with the weather. An active market will be dependent upon the larger corporations, who have been relying upon districts from which shipments have been particularly bad, rather than upon the smaller consumers who appeared to be well stocked. On the whole there is a fairly large demand, and with supplies reduced and with a restricted output, due to the suspension over the holidays, prices are firm or advancing. The car supply is variously reported as both good and bad. It is stated that some roads are short, but making every effort to take care of coal consignments, while at other points the demand for equipment in other industrial branches is easing off which is helping the movement of coal. Supplies were undoubtedly reduced over the holidays, which is resulting in a temporary rush for stocks at the present time.

Demand for prompt delivery in the Pittsburgh district is relatively light, and production is again about back to normal; a fair amount of contracting was closed on Jan. 1, but most of this business here goes over until April 1. The local coke situation has eased off slightly. The softening of the domestic grades in Ohio, due to the unseasonable weather, has now disappeared and all sizes are again strong. Production at the mines has been fairly good, and the car supply much improved due to the intervention of the holidays; contracts are being renewed at slightly higher figures. The situation in the Southern market has eased off especially as regards the steam grades; a fair demand is anticipated, however, over the next two months. The order of the Louisville & Nashville Railroad, requiring all operators on their line to turn their entire output, during three days of the week, over to the company, has been rescinded, but it is doubtful if the road has acquired a sufficient supply, and the order may again go into effect at any time.

The trade in the Middlewest is described as being entirely a weather market, and the winter so far has been only an extension of the fall. At the present time supplies are plentiful, and the holiday dullness has effected a reduction in quotations; if the weather is as mild through January, as was the case in December, it is thought that summer prices will almost be reached. There is coal of all kinds on track, buyers are scarce, and a better supply of equipment on the railroads has resulted in heavy shipments. The same unsatisfactory conditions due to the mild weather, prevail in the Northwest, and operators are attempting to curtail production. Prices at this latter point are, however, being better maintained.

BOSTON, MASS.

Coal is firm with buying on a large scale and there is more inquiry for what bituminous is available. Stocks in New England are rather uneven and the demand from this territory will greatly depend upon the weather. It will also depend on loading conditions at Baltimore and Hampton Roads and if no improvement is shown, there will be an increasing call for Pennsylvania grades out of New York. The largest consumers are most likely to come into the market for spot coal. All-rail, the spot demand is not so insistent. The market in that direction does not yet justify any considerable volume of speculative coal and unless weather conditions become exceptionally hard, the call is likely to be limited at what are considered high prices.

Less anxiety over anthracite seems the rule, although there is little real occasion for it; all admit it is the influence of mild weather. The storm of Jan. 3 and 4, with its interruption to the barge movement will probably cause new anxiety over the light receipts. The almost spring like temperatures this week have reduced retail deliveries to a minimum, and this has enabled many a dealer to bear a cheerful front. Premium coal is still a ready sale at $7.35 @ 7.60 alongside Boston, and $8.25 @ 8.50 is a current price for stove coal on cars for shipment inland. The high retail prices that prevailed are still maintained and the shortage of stove coal continues the chief feature of hard-coal trade.

Current of quotations are about as follows:

Clearfields, f.o.b. mine,	$2.10	@ 2.20
Clearfields, f.o.b. Philadelphia	3.25	@ 3.40
Clearfields, f.o.b. New York,	3.55	@ 3.70
Somersets, &c., f.o.b. mine,	2.15	@ 2.25
Somersets, &c., f.o.b. Philadelphia	3.40	@ 3.50
Pocahontas, New River, f.o.b. Hampton R'ds.	3.50	@ 3.60
Pocahontas, New River, on cars Boston,	4.60	@ 4.90
Pocahontas, New River, on cars Providence,	4.60	@ 4.75

NEW YORK

Bituminous—In spite of the continued mild and unseasonable weather, the soft-coal trade is still holding its own, and if anything, becoming stronger. The effects of the curtailment in production over the holidays are now being felt, and local supplies are quite short, particularly in the better grades, which are practically unobtainable in the spot market. The conservative members of the trade believe that quotations are now approaching the high point for the season. It is thought that the next cold snap will see the maximum prices in effect, after which there will be a gradual easing off to the usual summer level.

A good car supply has been reported on practically all lines shipping the New York market. It is estimated that production in the Pennsylvania field has been up to about 75 per cent. of full-rated capacity. The labor shortage appears to be the worst feature of the industry, and the effects of this are being felt generally all over the mining districts.

New York bituminous prices experienced a further advance during the week, while anthracite has about held its own, prices now being quotable about on the following basis:

	Anthracite		*Bituminous*	
	Upper Ports	Lower Ports		
Broken	$5.00@5.25	$5.00@5.25	West Virginia, steam.	$3.25@3.35
Egg	5.25@5.75	5.20@5.75	Ordinary grades,	
Stove	5.25@6.25	5.20@6.25	Penna	3.25@3.35
Chestnut	5.50@6.25	5.45@6.25	Fair grades, Penna.	3.25@3.35
Pea	3.50@4.10	3.45@4.10	Good grade, Penna.	3.35@3.45
Buckwheat	2.60@2.75	2.35@2.70	Best miller, Penna.	3.40@3.50
Rice	2.15@2.25	1.70@1.95	Georges Creek	3.50
Barley	1.75	1.25@1.70		

Anthracite—The hard-coal situation has become so easy that the head of one of the large local selling agencies went so far recently as to state that the unseasonable weather might cause the bottom to drop out of the market. With a shortage of 6,000,000 tons in the trade, such a view is obviously an exaggeration of the situation, but it is nevertheless pertinent as showing the better feeling which exists among the anthracite companies. The demand is still strong, but there is no doubt that warm weather is enabling the operators to rapidly catch up. There is no demand for the high-priced grades, but speculators who have acquired such are holding on firmly until the cold weather appears.

Egg coal has become so plentiful that there have been some cases of the individuals offering this down at the regular company's circular. Nut continues about normal with broken a little short. Pea is almost entirely out of the market, and rice and buckwheat are being substituted for this grade; as a result, this latter size is somewhat stronger. The market is flooded with barley, which it is almost impossible to dispose of.

PHILADELPHIA, PENN.

The second week in the new year finds the coal trade in this vicinity in practically the same position as when the year closed. As a matter of fact, the open weather has been the only salvation the dealers have had, enabling them to stave off, to some extent, the demands made on them. Taking it altogether, it may be said that the situation is a trifle easier. Every size is moving off almost as promptly as received, and the arrivals are not by any means heavy, but

householders do not have to wait quite as long to have their orders for certain sizes filled, as was the case a month or so ago. Stove and pea seem to still continue in the lead. Egg may be said to be a trifle easy, gaged by the fact that the individual operators are playing this size heavier than either stove, chestnut or pea, and quotations from them on this size are pretty close to circular; there have even been cases, it is understood, that a prompt order will take the coal at even less.

The present price of egg is almost a safe indication that this size is in fairly good supply. It is understood, however, that the large companies are having no difficulty in moving it off, although some districts are complaining that their orders for it are being shipped, while those for other sizes are ignored. The week really marked the beginning of full work at the mines, after the holidays. The output has been anything but normal, even when the collieries were reported as working, for in many cases, the full complement of men were not out.

The bituminous market shows little or no change as far as prices are concerned. The available supply, however, seems to be better, due no doubt to the fact that the mines were able to produce their normal output, but there is a ready demand just now, that is absorbing all that is sent to market.

PITTSBURGH, PENN.

Bituminous—Production of coal is almost back to normal, after the interruption of the holidays. Demand for prompt is relatively light. Shipments had been curtailed to some manufacturing consumers, on account of works being closed for inventory, but are again being resumed this week. There is little interest in contracts at this time. A fair volume of contract business was closed for various periods beginning Jan. 1 but the great bulk of this business will be for the twelve-month beginning Apr. 1. Circular prices are well maintained, and remain as follows: Slack, 90c.; nut and slack, $1.05; nut, $1.25; mine-run, $1.30; ¾in., $1.40; 1¼in., $1.55; per ton at mine, Pittsburgh district.

A rise in the river last week permitted a good tonnage of Monongahela River coal to go down the Ohio to the various distributing points.

Connellsville Coke.—The market for prompt coke has been easier than expected, there being no particular pinch on account of the curtailment of shipments during the holidays. While as high as $4.15 and $4.25 was obtained in a very few cases for prompt furnace coke, around Christmas time, the market has dropped back to $4, where it stood before the holidays, and sales at this figure have been rather light in the past week, less than 5000 tons; in several cases operators have sold to brokers at less than this figure. There is very little inquiry for early delivery coke and it does not appear that many furnaces allowed their old contracts to expire Dec. 31 without making fresh ones. Foundry coke continues relatively scarce. We quote: Prompt furnace, $4; contract furnace, first half, $3.25 @ 3.50; contract furnace, year, $3 @ 3.25; prompt foundry, $4.25 @ 4.50; contract foundry, $3.25 @ 3.75, per ton at ovens.

BALTIMORE, MD.

The new year had an auspicious beginning for the Baltimore coal trade, and if the remainder proves to be as satisfactory, especially from the standpoint of prices, local operators will have no cause for complaint. Naturally, the supply of coal was greatly reduced, owing to the holiday, and there was a rush for fuel on the part of consumers, resulting in an exceptionally strong market. Sales of the common grades at $2 per ton were the rule rather than the exception and operators who could deliver at this price found plenty of buyers. Other grades have shown corresponding increases.

The idleness at the mines, caused by the Christmas and New Year holidays, has resulted in a marked decrease in the output and this scarcity of coal is now being felt. The mines for the past two weeks have not worked more than six full days, and it can be easily seen that such a prolonged cessation will have a pronounced effect on this and other markets. Because of this condition, consumers who managed to stock up heavily before the holidays, have been compelled to draw largely on their supply with the result that they now have little on hand. Some were able to buy at the market, but others were not.

The car supply is about the same as it was the previous week. All the roads are still short of equipment, owing to the enormous traffic which is being moved but they are making every effort to take the best possible care of coal shippers. Considerable fuel was handled over the piers here, destined for New England and other ports. The weather was cold during the week, which stimulated the demand for anthracite fuel.

The market may ease up a bit when the mines again produce their maximum output, but the trade is of the opinion that there will be no cheap coal for some time to come. Baltimore operators do not believe that there is going to be any cessation in business, and that the demand for all grades will continue brisk. The cold weather also brought increased business to the anthracite trade. Many householders found that their bins were about empty the early part of the week, and were quick to put in an additional supply.

BUFFALO, N. Y.

There is a big demand for bituminous coal and with the output still light on account of the holidays, the prices remain firm. The trade, instead of hearing that coal is offered at cut prices, steadily reports the opposite, so that the former strength certainly holds out well. Quite a block of Allegheny Valley coal sold a day or two ago for $1.85, mine-run gross, at the mine, this same quality selling last summer as low as $1 or $1.05. This difference is fairly staggering, especially if it is a real indication of the advance that business has made since that time.

Prices are not quite as high in the bituminous trade as they were a month or so ago, but they are strong enough and nobody is complaining unless it be that they are not getting out as much coal as was planned for. Still the annual reports of output coming in are satisfactory when it is figured that quite a good percentage of it has been sold for at least 30c. a ton more than it would have brought a year ago.

There is much the same complaint of car shortage, though as a rule other branches of business are not demanding so much equipment as they were a month ago, so that coal will get the benefit after a little. The railroads are likely to take even more fuel for holding if actual winter sets in so that the private consumer is not in good position to get prompt deliveries as he was last fall. Complaint that the roads are not acting fairly in taking so much coal now continues, but it is not going to be easy to change their methods.

There is a little slacking off in the price of coke, though that was expected because it ran too high for awhile. Best Connellsville is not now above $6.25 and there is some stock to be had. In the bituminous market the quotations remain firm at $3 for Pittsburgh lump, $2.85 for three-quarter, $2.75 for mine-run and $2.50 for slack, with Allegheny Valley about 25c. lower. Side coal, such as cannel and smithing, are all strong.

The warm weather has kept the anthracite dealer and consumer very anxious. One day orders will be numerous and then the sunshine will occasion a number of cancellations but when the winter shows a disposition to return, it brings the orders back again. Independent anthracite still commands a good premium.

COLUMBUS, OHIO

With lower temperatures prevailing and a continuation of active business conditions generally, the coal trade in Ohio has been fairly active during the past week. The softening in domestic sizes, which resulted from the unseasonable weather, is now passing away and strength has appeared in all grades. The demand for domestic as well as steam sizes is good and the production in Ohio fields has been fairly large during the week.

Despite the fact that the one holiday interferred, the output was about 65 per cent. of normal during the week. The car supply was much better, due to the intervention of the holidays and also to the warmer weather which aided railroads in a better freight movement. The improvement in the car supply is expected to be only temporary as the underlying conditions have not improved in the least.

One of the strong points in the market has been the steam business. Factories are demanding a large amount of fuel and this is especially true of the iron and foundry concerns. Contracts, which are expiring now, are being renewed at slightly increased figures and the low railroad fuel contracts of last year will be a thing of the past. The requisitions on the part of railroads for fuel are large.

Retailers are now in the market for more stocks since the mercury has descended. Their supplies were not large and it only required a few days of wintry weather to exhaust them in most places. As a result orders for immediate shipment are now the rule and producers are able to accommodate the dealer because of the better car supply. There is a good demand for the fancy grades of domestic coals such as splints and Pocahontas.

The bad conditions of the streets has hindered deliveries on the part of dealers. Retail prices are strong at the same level which has prevailed for several weeks.

Quotations in Ohio fields are as follows:

	Hocking	Pittsburgh	Pomeroy	Kanawha
Domestic lump	$2.00	.....	$2.25	$2.00
¾-inch	1.80	$1.50	2.00	1.65
Nut	1.50	.....	2.00	.....
Nut, pea and slack	1.15	.....	1.25	1.10
Mine-run	1.50	1.40	1.50	1.50
Coarse slack	1.00	1.05	1.10	0.90

CLEVELAND, OHIO

From the viewpoint of producers and shippers of coal, 1913 will be the banner year in the coal trade. The close of 1912 finds prices 25 per cent. higher than those which prevailed a year ago. With the unprecedented and, in many cases, the unexpected increase in traffic in the many lines of business, operators have every reason to believe that prices will continue to go upward.

The speculative movement of coal to this district has slightly diminished during the past few weeks, which, no doubt, has been due to the mild condition of the weather for the past 30 days. Transportation lines are handling a large volume of business, but consumers seem to be pretty well under contract for their requirements.

The following prices per net ton f.o.b. cars at the mines are quoted on the various grades of coal for spot shipment.

District	Three-quarters	Mine Run	Slack
Youghiougheny	$1.35	$1.25	$1.10
Pittsburgh No. 8	1.20	1.10	1.20
Goshen No. 6	1.45	1.35	1.20
Coshocton	1.75	1.50	1.20

The freight rate from the Youghiogheny district to Cleveland is $1 per net ton, and Pittsburgh No. 8, 90c.; the Goshen and Coshocton coals from the middle district take a 70c. rate. The demand for Massillon domestic coal continues to hold out: $2.50 for 1¼ in. is quoted for shipment at the mines. Foundry coke is selling for $4.50, f.o.b. ovens, while $4.25 is quoted on furnace. Anthracite is extremely scarce and dealers are experiencing great difficulty, due to this shortage.

Pocahontas lump and egg is bringing $2.75, run-of-mine, $1.50, and slack, 90c., f.o.b. mines, while $2.50 is quoted on Massillon, 1¼-in. lump at the mines. Foundry coke is selling for $4.50 f.o.b. ovens, while furnace coke is going at $4.

Small dealers are experiencing difficulty in securing anthracite coal. Substitutions are made freely, and those who have not been able to secure their requirements of hard coal, have been forced to utilize soft.

Railroads are operating to their maximum capacity and are demanding heavy fuel shipments from the mines. A large Canadian Road recently purchased from 50 to 75,000 tons of Pittsburgh No. 8 fuel for shipment into Canada prior to April first. The recent cold wave did not have much effect on the market and coal men believe prices will hold out.

LOUISVILLE, KY.

As predicted last week, the situation has eased up considerably, especially in the steam coal market; although the expected break in prices has not yet materialized, the falling off in the steam grades might well be designated as such, the difference being 30 to 40c. a ton below the high figures which prevailed during the worst of the shortage. For example, Western Kentucky pea and slack is on the market at 40 and 50c., and some sales have been reported as low as 35c., f.o.b. mines, of course; and nut and slack is selling in the same district at prices running all the way from 65 to 80 and 85c., depending largely on quality and location.

Some large consumers, however, whose supplies ran low during the recent scarcity of steam grades, and who have not yet been able to stock a sufficient amount over and above their current needs to assure them of a margin of safety, are now making strenuous efforts to remedy their deficits. They are consequently taking everything in sight, in many cases necessarily at figures higher than those quoted, especially outside of their contract requirments.

Western Kentucky is figuring strongly in this feature of the market, screenings from that field being shipped to the local industries in considerable quantities, and absorbed without any trouble. The usual Christmas lay-off affected Eastern Kentucky operators, although beginning on New Year's, the men were back on the job in most cases, and half a day's run was made. The week's output was light everywhere by reason of the holidays, however, and there has been no complaint of insufficient cars.

Seasonable snows and considerably lower temperatures than ruled through December may be expected to result in a stiffer demand for all grades, especially the domestic. So mild has been the winter up to the past two weeks, that even with the scanty receipts from the mines, there has been no real danger of a shortage, with buying so comparatively slow. The worst of the winter usually occurs in January, February and March, and a brisk demand is to be expected for this and the next two months, at least, with the usual stocking by the railroads to follow that.

The Louisville & Nashville, whose recent demand for three days' output from all Eastern Kentucky mines on its lines, adhered to its promise, releasing the operators from this requirement, some time around Christmas. It may be doubted, however, whether the railroad managed to lay in sufficient supplies to last for any time, and it is, therefore, to be hoped that the present relief in the car situation is not merely temporary. In Western Kentucky the receipt of a number of the Illinois Central's long expected new cars, has had considerable to do with the relaxation of the tension in this respect, in that district.

Eastern Kentucky prices, especially on domestic grades, have been showing indications of weakening, but there is not yet much of a concession in this respect. Block is quoted at $2.25 to $2.50; lump 10 and 15c. lower; round, $1.75 to $2; nut and slack, 65 to 90c.; run of mines, $1.25 to $1.50.

The prediction is freely made by well informed operators that the trade is on the verge of a sharp break. The domestic market has been gradually declining for 30 to 60 days, on account of the continuance of mild and open weather, and this in spite of the severity of the car shortage. The supplies of local dealers, however, have in all cases been ample to tide them over this period, and consequently there has been no shortage in domestic. The market in the steam grades, which has been extremely high, is also expected to ease off somewhat, as the car situation is gradually improving; the demand of the Louisville & Nashville was responsible for a more acute condition than had existed during the entire season, but the road has about satisfied its needs. Moreover, it has been returning cars very rapidly, unloading and sending them back promptly to the mines. This made the three-day loading to the railroad no more of a hardship on the operators than was absolutely necessary.

HAMPTON ROADS, VA.

A very heavy tonnage of coal has been loaded during the past few weeks for the Panama Canal. It is understood that work there is now being pushed to the full limit. The market price on standard smokeless coal still continues upward of $3.25, with very little available.

The demand for bunker and export coal for ships' use has grown steadily during the past few months. The cost of producing and handling, the latter especially, have been increased materially by changes in railroad as well as pier charges during the year. As bunker contracts are generally made only at the first of each year, shippers were obliged to stand these new charges until time to make new contracts with ship owners.

INDIANAPOLIS, IND.

The coal trade here is a weather proposition, and so far, the winter has been merely an extension of fall. It has finally had the effect of enabling mines and dealers to catch up with consumers' demands, after the great handicap at the beginning of the season caused by the shortage following the spring shutdown and the railroad transportation troubles. The usual holiday dullness brought a reduction in the domestic grades of about 40c. a ton, and on steam grades 10c. to 15c. a ton, since Dec. 1. The weather has also had the effect of practically ending the car shortage and mines are making few, if any, complaints of lack of equipment.

If January has the same mild weather as December, the summer schedule of coal prices will be almost certain to go in effect at the mines. Values of the steam grades have not suffered like the domestic because most steam coal is under contract, and there is only small buying in the open market. The easing off in domestic prices is not yet shown by retailers' quotations because the mines are still delivering to the yards on old orders, taken at the top of the market.

The following represents closely the Indiana mine prices, Indianapolis prices being 50c. higher, to cover freight:

No. 4 mine-run	$1.10	Domestic lump 5- and 6-in.	$1.65
Nos. 5 and 6 mine-run	1.00	Screenings, No. 4	0.70
No. 4 steam lump, 1½-in.	1.25	Screenings No. 5 and 6	0.60
Nut, No. 4	1.30	Washed coal, Nos. 1 & 2.	$1.75@2.00
Egg	1.40	Brazil block	2.20
Domestic lump 2½-in.	1.50		

DETROIT, MICH.

Bituminous—The coming of the new year witnesses an unsatisfactory situation in the Detroit market. Operators are reluctant about making shipments to this point, preferring to wait until the weather conditions are more favorable. They are slow to cut the prices and cause a break in

the market, at least until it has been fully demonstrated that cold weather will not appear. On the other hand the operators and jobbers of Detroit look back with great satisfaction on the year of 1912, and are now predicting with great confidence that 1913 will be a banner one in the coal business.

One encouraging feature of the holiday dullness is the fact that the prices rule firm. There has only been a slight drop in quotations and the smaller sizes are still in great demand with very little to be had. Track coal is scarce and is being disposed of with little or no difficulty as fast as it arrives. The railroads are experiencing considerable difficulty in handling cars properly, which has resulted in embargoes on nearly all of them. However, these conditions are not as severe as they were a year ago at this time. On the coarser sizes and domestic coal, the existing conditions are quite different. There seems to be considerable of this kind of fuel in stock, which it is utterly impossible to dispose of, and a number of shippers are much worried about the outcome. The fact of the matter is that the prices on this grade are ridiculously low.

Local market conditions are as follows:

	W.Va. Splint	Gas	Hocking	Pitts. No. 8	Jackson Hill	Pocahontas
Domestic lump	$1.50	.....	$1.40	.....	$2.40	$2.40
Egg	1.50	.....	1.40	.....	2.40	2.40
Nut	.....	.....	1.90	.....	.....	.....
¾-lump	1.35	$1.35	.....	$1.25	.....	.....
Mine-run	1.15	1.15	1.15	1.20	.....	1.60
Slack	1.10	1.10	1.10	1.10	.....	Open

Anthracite—The hard-coal situation is being relieved quite materially, abundance of the larger sizes are arriving and the market continues to be liberally supplied. However, it is predicted that 10 or 15 days of severe weather would bring quite a change in this situation. Were severe storms to come, in all probability the big shippers would send their fuel to eastern markets, rather than take any chance of it being tied up indefinitely in and about Detroit.

Coke—Demand for coke is not so keen as it has been. However, it seems to be holding its own as to price, Semet Solvay being quoted at $4.75, gas house at $4.50 per ton, f.o.b. ovens.

CHICAGO

With the beginning of the new year a soft market is confronting Chicago coal dealers. Moderate weather and a better supply of cars are assigned as the chief reasons. Coal of almost every kind is on track and immediate buyers are few, the only exception being in anthracite. Retail dealers are receiving a comparatively scant supply and are barely able to keep even with the demands of their customers.

There has been a decided slump in the demand for splint coal. Two weeks ago dealers were kept busy obtaining supplies of this variety, but now there are many carloads remaining on track unsold. The circular price is $2, but the market is considerably below this. Smokeless market also is weak. Carterville operators are holding their high-grade domestic product for $1.75, but the low-grade coals have not sold for much under $1.50. Furnace and foundry cokes are in good demand. The price of Springfield domestic lump ranges from $1.35 to $1.60.

Mild weather has had a bearing on the general situation and retail dealers have been taking coal only on previous orders. The Western demand for anthracite continues active and it is believed that the situation will become acute before long as shipments are expected to be light for some time.

Prevailing prices in Chicago are:

	Sullivan Co.	Springfield	Clinton	W. Va.
4-in. lump	$2.62	.....	.....	.....
Domestic lump	.....	$2.32	$2.27	.....
Egg	2.52	.....	.....	$3.80 @ 4.05
Steam lump	2.07 @ 2.17	2.12	2.17	.....
Mine-run	.....	1.97	1.97	3.45 @ 3.55
Screenings	1.62 @ 1.67	1.47 @ 1.57	1.57 @ 1.62	.....

Coke—Connellsville, $6.75@7; byproduct, egg and stove, $6@6.25; byproduct, nut, $6@6.25; gas house, $6.

OGDEN, UTAH

The holidays found the mines in Wyoming and Utah shipping all the coal they were able to mine. The shortage of box cars that has been general, for the past three weeks, developed into a shortage of all kinds, and the mines in Wyoming lost a few days on this account. The shortage on the Rio Grande Railroad that has affected the mines in Utah for the past three weeks, was accompanied by a severe congestion on the road at several points and the tonnage the last week in December fell off immensely. These blockades were so severe that the railroad was unable to move the loads away or supply the mines with empties.

Weather conditions remain about the same over the Northwest, and there is a good demand for domestic coal. The shortage of anthracite coal in eastern Nebraska has increased the demand for bituminious coals and at present the shipments east of Grande Island are good.

There seems to be no excessively low temperature in any locality, the lowest reported being about 8 deg. above zero. Reports from the territory covered by the Wyoming and Utah mines show that most dealers have disposed of a large percentage of their stocks in the last two weeks and are urging the operators to place some coal in transit, anticipating colder weather in January.

ST. LOUIS, MO.

The St. Louis coal market is very quiet for this season of the year. Everybody is well stocked up and no one is buying. It was thought that the first of the year would bring changes in both weather and prices, and although the weather has been somewhat cold, it has not been enough to warrant any material change in prices.

Cold waves and snowstorms seem to circle around St. Louis, leaving the weather here moderate. Towns to the southeast are experiencing heavy storms, and trains entering St. Louis from the east are covered with snow.

Anthracite egg, stove and grate are flooding the St. Louis market, but chestnut is not moving as fast as it should.

The prevailing prices are:

	Carterville and Franklin Co.	Trenton and Big Muddy	Mt. Olive	Standard
2-in. lump	.....	.....	.....	$1.00 @ 1.10
3-in. lump	.....	.....	$1.40	.....
6-in. lump	$1.35 @ 1.50	.....	1.60	1.25 @ 1.30
Lump and egg	1.45 @ 1.60	$2.25	.....	.....
No. 1 nut	1.30 @ 1.40	.....	.....	.....
Screenings	0.75 @ 0.85	.....	.....	0.55 @ 0.65
Mine-run	1.10 @ 1.20	.....	.....	0.90 @ 1.00
No. 1 washed nut	1.50 @ 1.60	.....	.....	.....
No. 2 washed nut	1.35 @ 1.40	.....	.....	.....
No. 3 washed nut	1.35 @ 1.40	.....	.....	.....
No. 4 washed nut	1.35 @ 1.40	.....	.....	.....
No. 5 washed nut	0.85 @ 0.90	.....	.....	.....

Gas house and byproduct coke are quoted at $5.50, f.o.b. St. Louis.

PORTLAND, ORE.

Colder weather has prevailed here the week past and the demand for coal for domestic purposes showed an increase. Heretofore the winter has been mild throughout the Pacific Northwest. A large order to be placed here soon is that of the Federal Government calling for 7000 tons for use in supplying power in the construction of the Celilo Canal on the upper Columbia River. Bids have been invited and will be opened in a few days by the government engineer in charge of the project. This will be one of the largest single orders for coal placed here for some time.

COAL SECURITIES

The following table gives the range of various active coal securities and dividends paid during the week ending Jan. 4:

Company	High	Low	Last
American Coal Products	90	90	90
American Coal Products Pref	111	111	111
Colorado Fuel & Iron	34⅜	34	34⅜
Consolidation Coal of Maryland	103½	103½	103½
Island Creek Coal Pref	87⅞	87⅞	87⅞
Lehigh Valley Coal Sales	220	220	220
Pittsburgh Coal	24⅜	23	23¾
Pittsburgh Coal Pref	94¼	91¼	93
Pond Creek	28¼	26	28
Reading	168⅞	165¼	167½
Reading 1st Pref	90	90	90
Reading 2nd Pref	93	92	93
Virginia Iron, Coal & Coke	58	55	55

Bonds Company	Closing Bid	Asked	Week's Range or Last Sale		Year's Range	
Colo. F. & I. gen. s f g 5s	97⅛	..	98	Dec. '12	79	100⅜
Colo. F. & I. gen. 6s	.....	..	107½	June '12	107½	107½
Col. Ind. 1st & coll. 5s. gu	82⅜	84	83½	84	72½	85½
Cons. Ind. Coal Me. 1s 5s	80	83⅜	85	June '11	...	....
Cons. Coal 1st and ref. 5s	....	94	93	Oct. '12	93	94
Gr. Riv. Coal & C. 1st g 6s	95	....	102⅜	Apr. '06	...	....
K. & H. C. & C. 1st s f g 5s	....	....	98	Dec. '12	97½	98½
Pocah. Con. Coll. 1st s f 5s	87	88	87⅜	87⅜	81½	89½
St. L. Rky. Mt. & Pac. 1st 5s	78½	81	79½	80	79½	84½
Tenn. Coal gen. 5s	102	102⅞	103	103	101⅛	103½
Birm. Div. 1st consol. 6s	102	103⅜	102½	Dec. '12	102⅝	104½
Tenn. Div. 1st g 6s	101½	103⅜	101½	Dec. '12	101½	104
Cah. C. M. Co. 1st g 6s	103½	110	110	Jan. '09	....	....
Utah Fuel 1st g 5s	....	....	....	....	....	....
Victor Fuel 1st s f 5s	....	83	85½	Oct. '12	85½	86
Va. I. Coal & Coke 1st g 5s	97	Sale	97	97	94½	98½

Lehigh Valley Coal Sales Co.—Dividend of $1.25, payable Jan. 20, to holders of record, Jan. 7.

Pacific Coast Co.—Regular quarterly 1½% on the common and second preferred and 1¼% on the first preferred, all payable Feb. 1.

COAL AGE

FLOYD W. PARSONS, *Editor.*

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VOLUME 3 JANUARY 18, 1913 NUMBER 3

CONTENTS

WITH PRINCIPAL ARTICLES SUMMARIZED

FOREWORD: *Page* 87

Some remarks concerning the evil practice on the part of a few mine officials in permitting their names to be used in connection with the promotion of fake business ventures It is suggested that a man can no longer loan the use of his name to an unsafe business enterprise and still hope to be held blameless. COAL AGE, Vol. 3.

IDEAS AND SUGGESTIONS: *Pages* 88-89

The Fallacy of Seven Shifts a Week—The Danger in Efficiency Methods—How Accidents May Be Reduced. By Joseph Northover. COAL AGE, Vol. 3.

SNAP SHOTS IN COAL MINING: *Pages* 90-91

Miscellaneous views of surface and underground equipment, gathered from all parts of the world.

PREPARATION OF BITUMINOUS COAL: *Pages* 92-94

The first of two articles on the subject. The different types of car-dumping devices are discussed, as well as the track grades, both approaching and leading from them. The slopes of bar screens and chutes for handling the various sizes of coal are also considered. By F. E. Brackett. COAL AGE, Vol. 3.

METAL MINE POSTS: *Page* 95

Description of a telescopic iron post designed according to a plan whereby the post will shorten rather than bend or break when subected to the strain of a heavy pressure. Posts designed on this principle are at present being used in some of the mines in Belgium. COAL AGE, Vol. 3.

STATISTICS ON COAL MINE FATALITIES: *Pages* 96-98

A brief review of coal-mine accidents during the last decade, 1902 to 1911, together with a short summary of the fatal accidents for the last 30 years, 1882-1911. It is shown that the death rate per 1000 men employed is somewhat less for 1912 than for the previous year. By Fredk. L. Hoffman. COAL AGE, Vol. 3.

DEVELOPMENT OF COAL CUTTING MACHINERY: *Pages* 99-100

Describing the inception and development of the continuous undercutting machine, from the first type employing a revolving cutter-bar and cleaner-chain to the present modern design, which will operate either right or left handed, and is driven by a motor entirely inclosed in a flame-proof case. By Thomas W. Fry. COAL AGE, Vol. 3.

AN AUTOMATIC SAFETY MINE GATE: *Page* 100

NEW YORK COAL MARKET IN 1912: *Page* 101

Being a review of trade conditions in both anthracite and bituminous coal. It is shown that the market was quite satisfactory during the greater part of the year. A. T. Shurick. COAL AGE, Vol. 3.

CHICAGO COAL TRADE IN 1912: *Page* 102

NOTES ON MINE GAS PROBLEMS: *Page* 104

Part of an article read at the winter meeting of the West Virginia Coal Mining Institute, Parkersburg, W. Va., Dec. 11, 1912. Discusses the explosive limits of methane. G. A. Burrell. COAL AGE, Vol. 3.

TWO-SPEED A. C. MOTOR FOR MINE FAN DRIVE: *Page* 106

WHO'S WHO IN COAL MINING: *Page* 107

Biographical sketch of Thomas Thomas, general superintendent of the Lehigh Valley Coal Co., Wilkes-Barre, Penn. COAL AGE, Vol. 3.

PROTECTION OF TROLLEY WIRES: *Page* 108

By U. U. Carr.

EDITORIALS: *Pages* 109-110

A Bituminous Trust—A Word with Our Readers—Self-propagating Inflammation.

DISCUSSION BY READERS: *Pages* 111-112

Reducing Ventilation at Firing Time. Letter No. 1—The Hastings Explosion—Timber for Framing.

INQUIRIES OF GENERAL INTEREST: *Page* 113

Surveying Methods—Discharge of a Mine Siphon.

EXAMINATION QUESTIONS WITH ANSWERS: *Page* 114

SOCIOLOGICAL DEPARTMENT: *Pages* 115-118

Bunsen Miners Change and Bath House. A. F. Allard—Sociological Development in 1912. R. D. Hall. COAL AGE, Vol. 3.

COAL AND COKE NEWS: *Pages* 119-122

COAL TRADE REVIEWS: *Pages* 123-126

INDEX OF COAL LITERATURE: *Pages* 127-128

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The superintendent listened and talked and finally said he guessed he wasn't interested in the salesman's particular make of fan.

When pressed for a reason why, the superintendent told him something like this:

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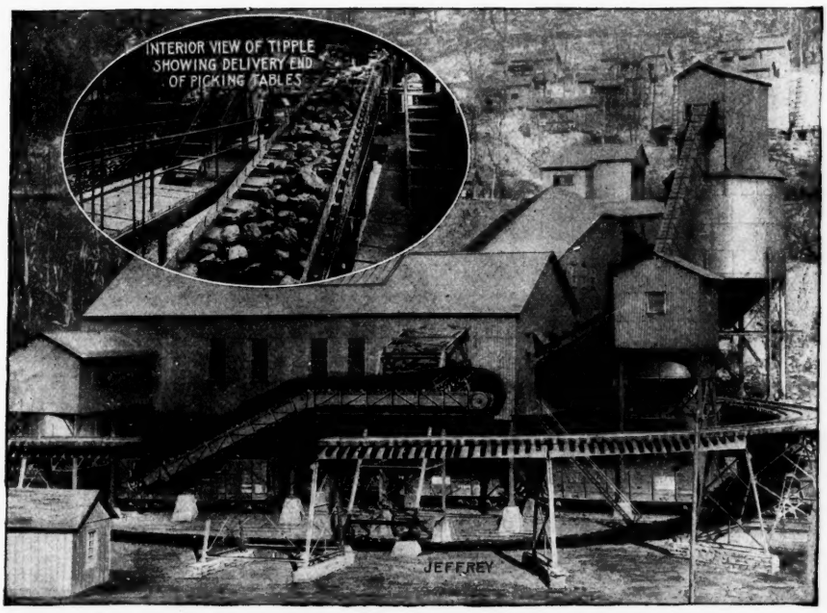

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The fact that our Picking Tables are ordered in lots of five and ten by those who have tried them out, tells its own story. They are self contained and built of a design which makes it possible to install them in many tipples already constructed.

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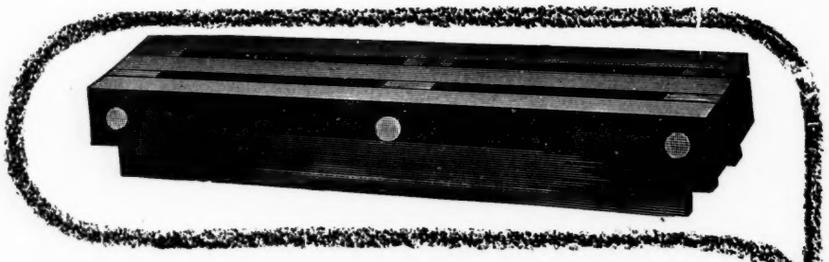

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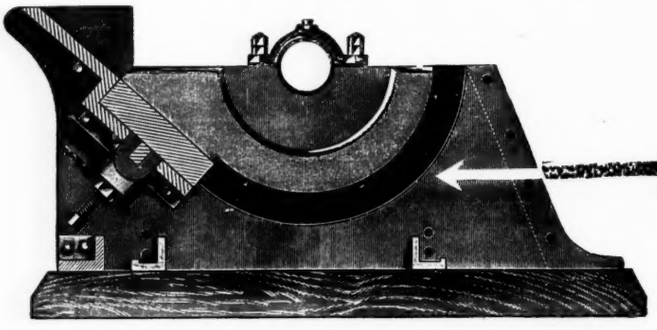

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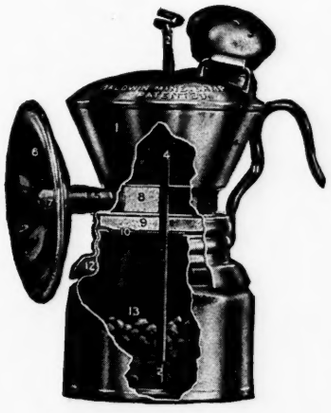

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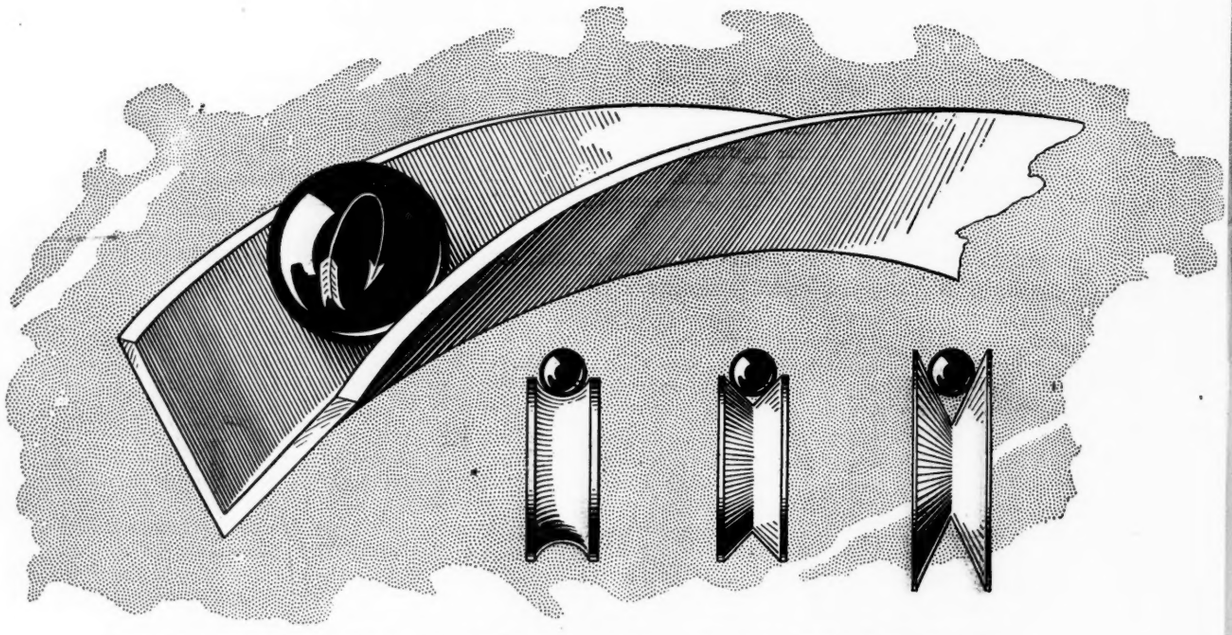

With Anything But Two-Point Contact, There is Nearly Always a Twisting as Well as Rolling Motion at the Points of Contact. This Twisting and Rubbing is Avoided in Hess-Bright Annular Ball Bearings.

But an anti-friction bearing, to be durable, must be *very* free from friction. Even a little chafing or twisting, due to bad design or workmanship, will wear it out rapidly, because the pressures are concentrated on small surfaces in contact.

The Hess-Bright

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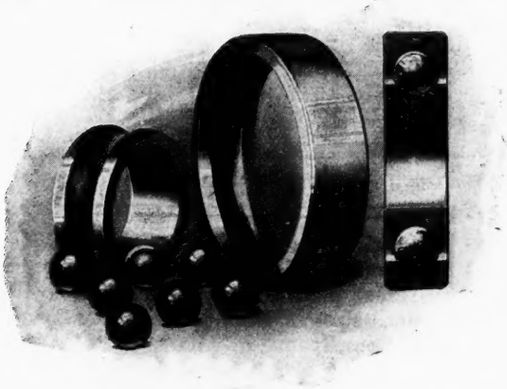


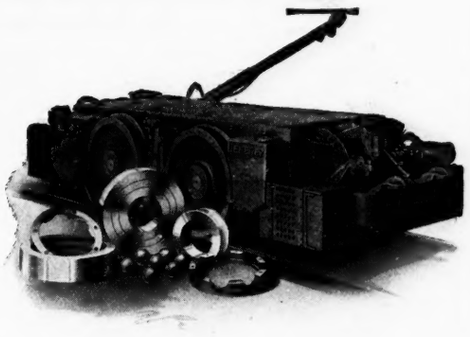
Hess-Brights Carry the Load in a Line Perpendicular to the Shaft Axis; Therefor Without Crowding.

This explains why some anti-friction bearings, which seemed to give fairly good results, have lasted but a short time in service. Though relatively frictionless (compared with plain bearings) their design or construction still prevented true rolling action, and the seemingly trivial departure from the ideal led to premature self-destruction of the bearings.

It explains also why freedom from such internal chafing, coupled with maximum hardness and load-carrying ability, results in such marvelous durability as is shown by the right sort of ball bearings.

HESS-BRIGHT BALL BEARINGS
Built for Endurance

are standard on all armatures of Jeffrey locomotives, and are supplied on specification by other leading builders of mine machinery.



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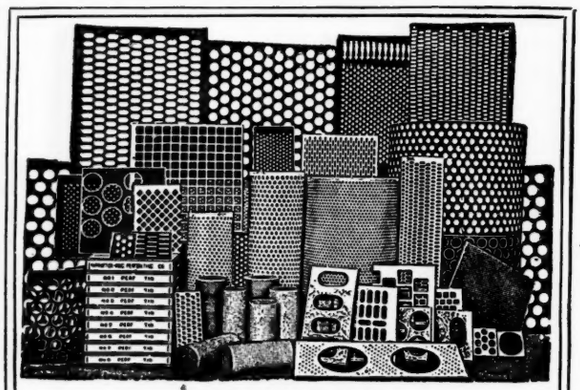

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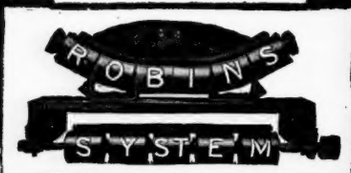

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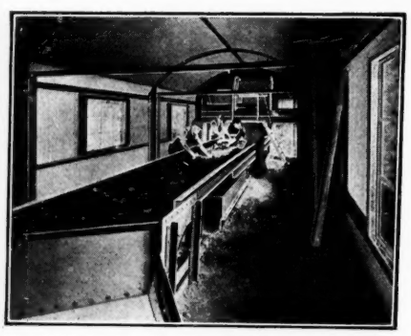

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